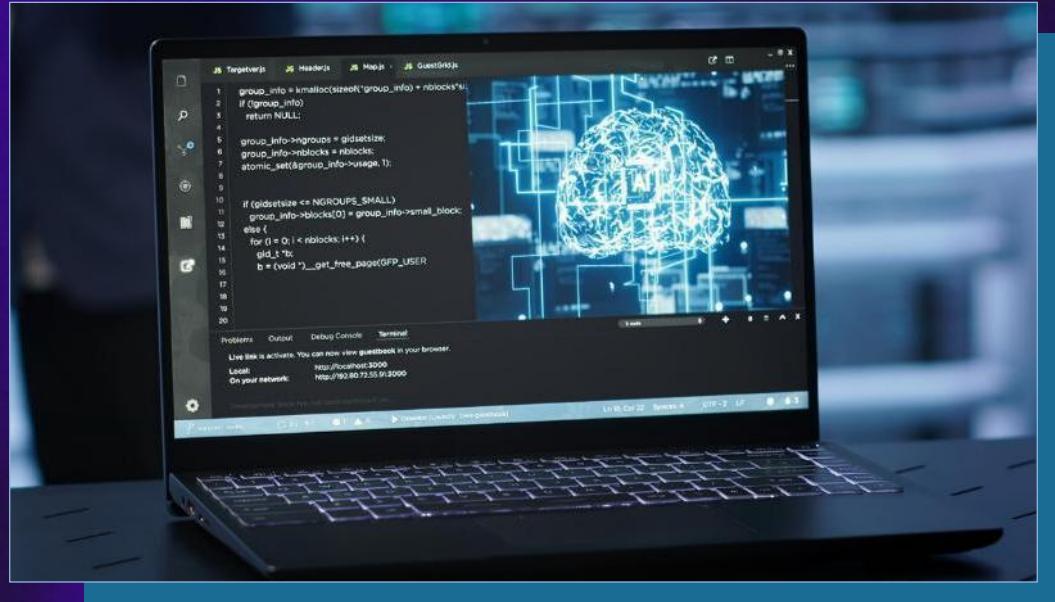


AI-Assisted Coding Intro

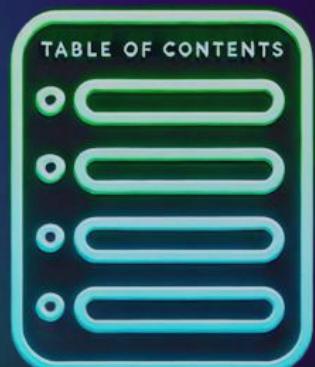
Vibe Coding, AI Dev Agents, GitHub Copilot



Svetlin Nakov, PhD
Co-founder @ SoftUni

Agenda

1. **Vibe Coding Demo** – Bolt and VS Code + GitHub Copilot
2. Programming **Languages** and dev environments (**IDEs**)
3. **Generative AI** and **LLMs**: LLMs, coding models, tokens
4. **Vibe coding** intro: concepts and popular tools
5. **Installing** VS Code + GitHub Copilot
6. GitHub Copilot **pricing** and **student licenses**



Sli.do Code

#AI-Programming

Join at

slido.com

#AI-Programming



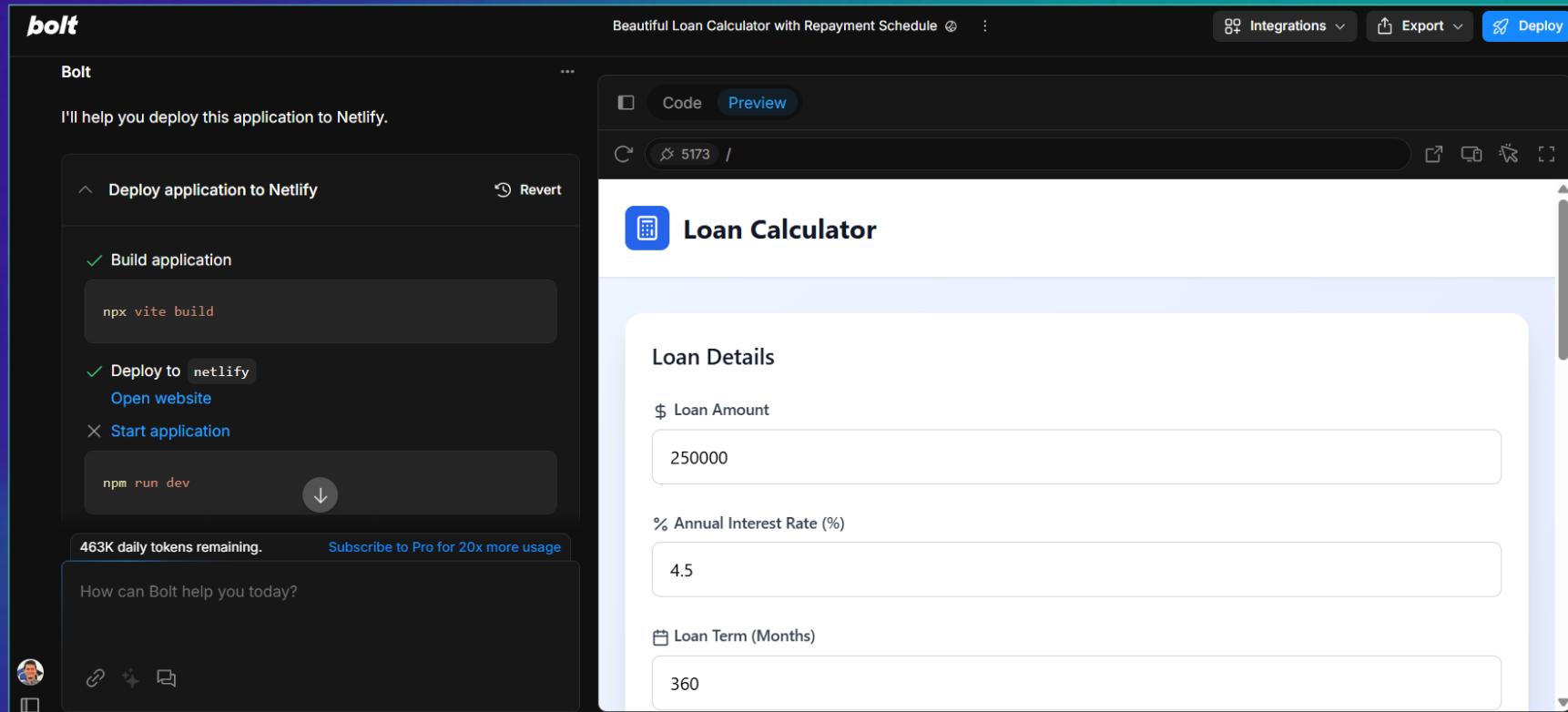
Breaks

20:00 / 21:00



Vibe Coding – Demo

Let's Start with a Simple Live Demo



Vibe Coding with Bolt – Live Demo



- Open <https://bolt.new>
- Type this **prompt**:

Create a loan calculator:
enter the loan amount,
the interest rate, and
the number of months,
then display the
repayment schedule.

- Wait for the app to be generated and started

The screenshot shows the Bolt AI interface. On the left, a dark panel displays the command history and execution results:

- ✓ Create initial files
- ✓ Install dependencies
- `npm install`
- ✓ Update `src/App.tsx`
- Start application
- `npm run dev`

A message at the bottom of this panel reads: "I've created a comprehensive loan calculator with a beautiful, professional interface. The application calculates monthly payments using the standard formula."

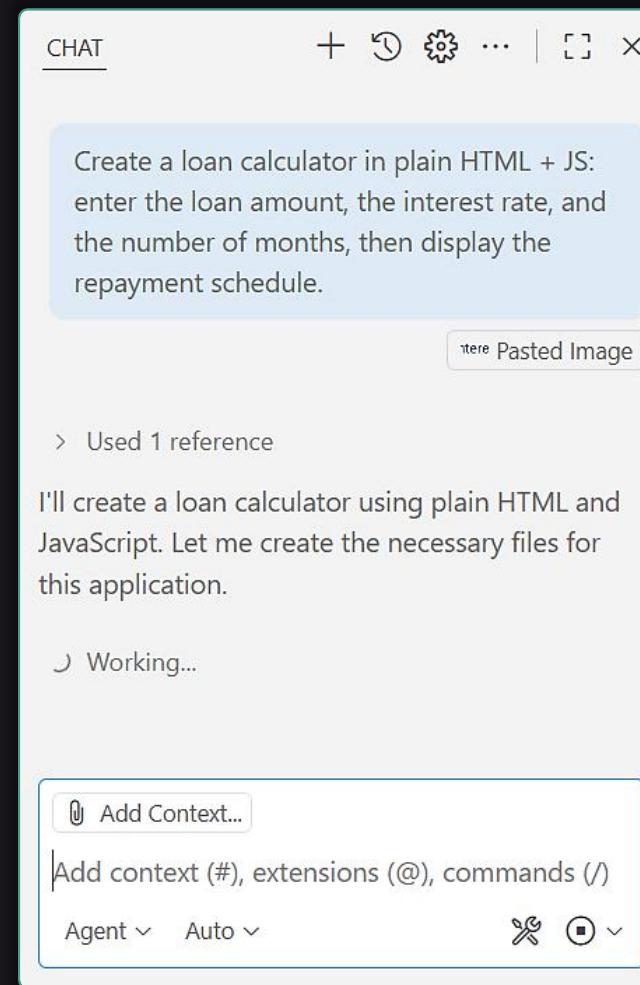
On the right, a preview window shows the generated application. The title is "Loan Calculator". The description says: "Calculate your monthly payment and view the complete repayment schedule". Below this is a form titled "\$ Loan Details" with fields for "Loan Amount" (\$ 250000) and "Annual Interest Rate" (3%).

GitHub Copilot – Live Demo

- Open [VS Code](#)
- Type this **prompt** in GitHub Copilot:

Create a loan calculator in plain HTML + JS: enter the loan amount, the interest rate, and the number of months, then display the repayment schedule.

- Wait for the app to be generated → start it

A screenshot of a web browser window titled "Loan Calculator". The URL bar shows "index.html". The page contains a form with a "Loan Term (months)" input field set to "60", a "Calculate Loan" button, and a "Loan Summary" section. The summary includes "Monthly Payment: \$4,492.17", "Total Interest: \$19,530.36", and "Total Amount: \$269,530.36". Below this is a "Repayment Schedule" table with four rows of data. The table has columns for Month, Payment, Principal, Interest, and Remaining Balance. The data is as follows:

Month	Payment	Principal	Interest	Remaining Balance
1	\$4,492.17	\$3,867.17	\$625.00	\$246,132.83
2	\$4,492.17	\$3,876.84	\$615.33	\$242,255.99
3	\$4,492.17	\$3,886.53	\$605.64	\$238,369.45
4	\$4,492.17	\$3,896.25	\$595.92	\$234,473.21

Welcome to Programming

Programming Languages
and Dev Environments (IDEs)



What is Programming?

- **Programming** == give instructions to the computer
 - Typically using a **programming language**, like JavaScript
 - Sample **instructions**:

`console.log("Hello")`

Hello

`console.log(3+5)`

8

`x = 5`

5

`console.log(x * x)`

25



```
Elements Console Sources
top □ Filter
> console.log("Hello")
Hello
<- undefined
> console.log(3+5)
8
<- undefined
> x = 5
<- 5
> console.log(x * x)
25
<- undefined
```

Source Code and Apps

- Instructions are arranged one after the other in a sequence, called "**source code**" (or just "**code**")
- Sample code (script), written in JavaScript:

```
usd = prompt("Enter USD:")  
euro = usd * 0.88  
console.log("Euro: ", euro)
```



- **Computer programs** (apps) consist of sets of files, holding **source code** + other app **assets** (e. g. images)



Computer Programs (Apps)

- Apps are typically bundled into an executable package
 - Android mobile apps are **.APK** files
 - Windows desktop apps are **.EXE** files
 - JavaScript Web apps are folders of files, holding
 - HTML + CSS + JavaScript code, images, fonts, etc.
- Source code == app code for developers
 - Example: <https://github.com/microsoft/calculator>
- Executable package == bundled (compiled) app for the end-user, e. g. Windows Calculator



Programming Languages

- **Programming languages** specify the form of instructions and rules (syntax) for writing program code
 - **JavaScript** – scripting language for the Web
 - **TypeScript** – improved JavaScript with static typing
 - **Python** – scripting language for scientists
 - **Java** – object-oriented, heavy, for enterprise projects
 - **C#** – general-purpose object-oriented language
 - **PHP** – scripting language for Web sites and apps
 - **C++** – complex language for real-time systems & games

Other Languages in Programming

- **HTML** and **CSS** – languages for creating Web sites
 - Display text, images, tables, forms, etc. in the Web browser
 - **HTML** – used to describe Web content, e. g. Web page
 - **CSS** – styling and formatting rules for HTML code

```
<h1>Languages</h1>
<ul>
  <li>JS</li>
  <li>Python</li>
  <li>PHP</li>
</ul>
```

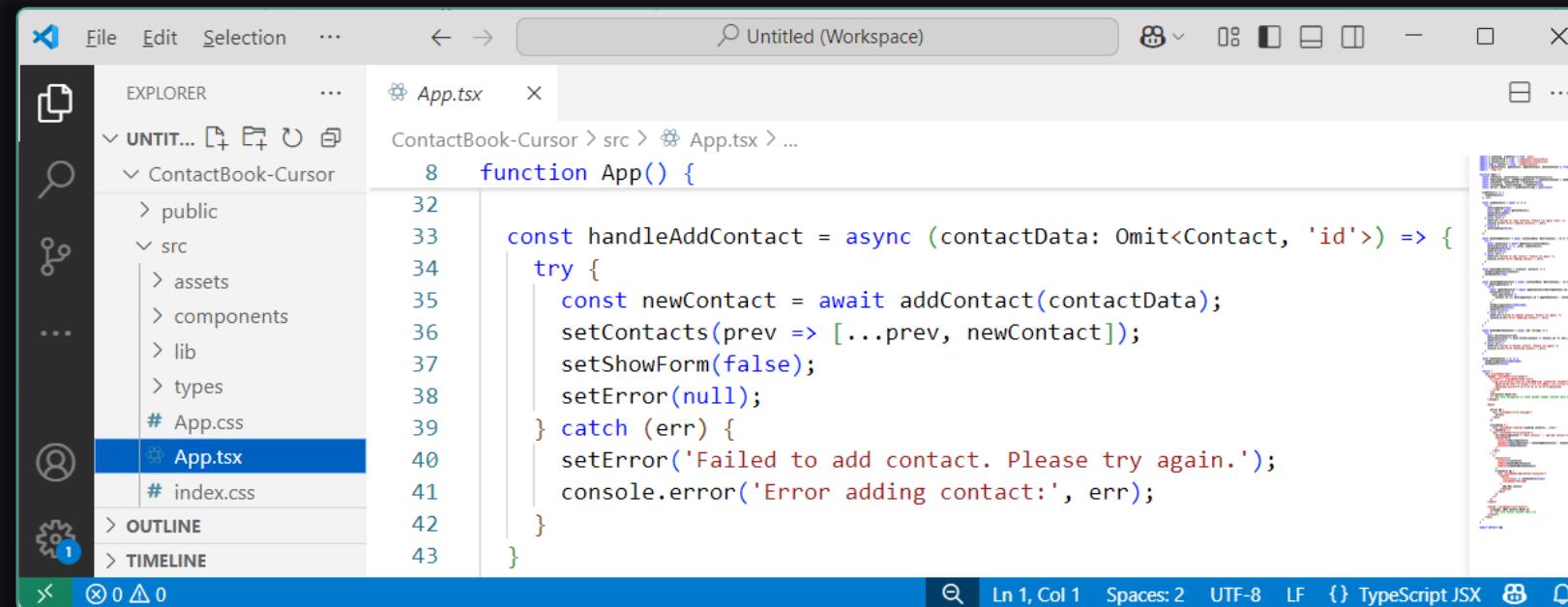
```
h1 { color: #2E4AA7 }
li {
  display: inline;
  padding: 5px 10px;
  background: #CCC;
}
```

Languages

JS Python PHP

Development Environments (IDEs)

- Developers write code inside **development environments**
 - **IDE** == Integrated Development Environment



A screenshot of a code editor window titled "Untitled (Workspace)". The left sidebar shows a file tree with a project structure: "UNTITLED...", "ContactBook-Cursor", "src", "assets", "components", "lib", "types", "# App.css", "App.tsx" (which is selected), and "# index.css". The main editor area displays the following TypeScript code:

```
function App() {
    const handleAddContact = async (contactData: Omit<Contact, 'id'>) => {
        try {
            const newContact = await addContact(contactData);
            setContacts(prev => [...prev, newContact]);
            setShowForm(false);
            setError(null);
        } catch (err) {
            setError('Failed to add contact. Please try again.');
            console.error('Error adding contact:', err);
        }
    }
}
```

The status bar at the bottom shows "Ln 1, Col 1" and "TypeScript JSX".



- In the IDE, developers **write** code, **execute** the code, **debug** and bug fix the code, **test** the code, bundle and **deploy** apps

Modern IDEs

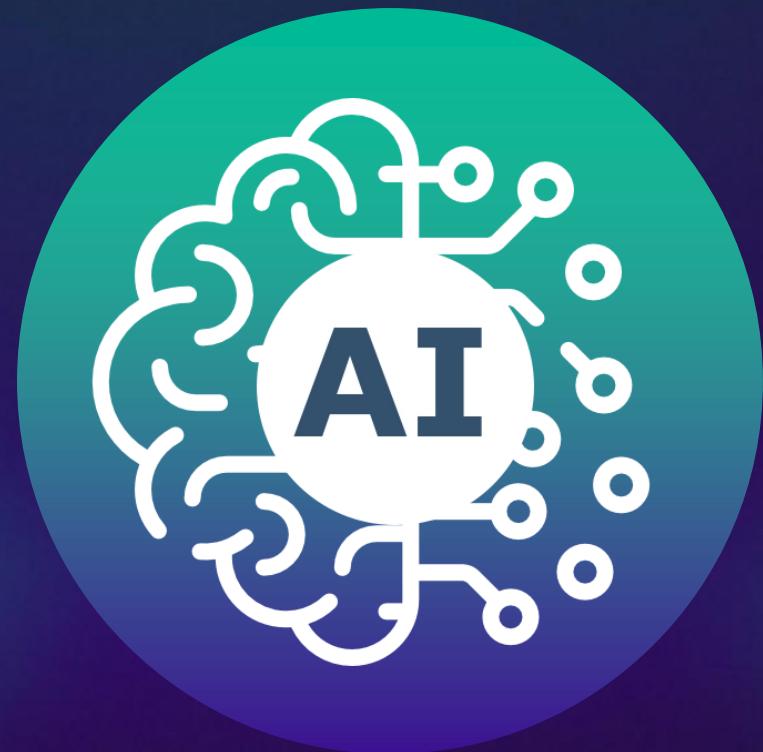
- Popular development environments (IDEs)
 - For **JavaScript / TypeScript**: VS Code, WebStorm
 - For **Python**: PyCharm, VS Code, PyDev (Eclipse)
 - For **Java**: IntelliJ IDEA, Eclipse, NetBeans
 - For **C#**: Visual Studio, Rider
- **AI-first** development IDEs
 - VS Code + GitHub Copilot, Cursor, Windsurf, Cline, Roo Code, Amazon Q Developer – AI coding, multi-language support
 - **AI chat window** for coding with prompts: Agent / Edit / Ask

Hosting Environments

- Apps can run **locally** or can be **hosted** in Internet
 - **Local app** example: you install a game on your smartphone
 - **Hosted app** example: a Web site, e. g. <https://apple.com>
- **App hosting environment** == computing resources, where a web site / app is running
 - **Server** in a data center, which holds your **app** and **data**
 - **Cloud** environment, e.g. Netlify, Vercel, Cloudflare, Azure
 - **Paid** and **free** app hosting environments
- Example of app hosting platform: <https://netlify.com>

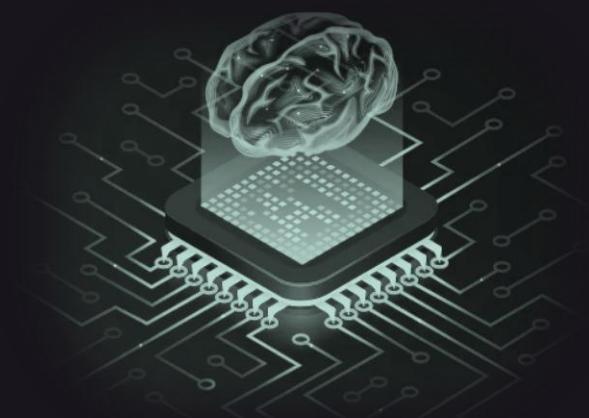
Generative AI and LLMs

LLMs, Coding Models, Agents, Tokens



AI and Machine Models

- **Artificial intelligence** (AI) == intelligent computer system
 - Performs tasks that typically require **human intelligence**
- **Machine learning**
 - AI uses **algorithms** and mathematical **models** that are trained on huge **data sets**, through many, many **examples**
- Examples of **machine models** (AI models):
 - **GPT-5** generates text (by text prompt)
 - **FLUX 1.1** generates images (by text prompt)
 - **SpeechT5** generates human speech (by text)



Generative Artificial Intelligence

- **Generative Artificial Intelligence (GenAI)**
 - **Large machine models**, trained on human text, images, documents, audio, video
 - **Generate** text, code, images, videos by **prompt**, answer questions, solve problems, create software
 - **Modalities** (what models take as input and output): text, images, screenshots, audio, video, code
 - Require **huge computing resources** for training and a significant resources for inference (generating answers)



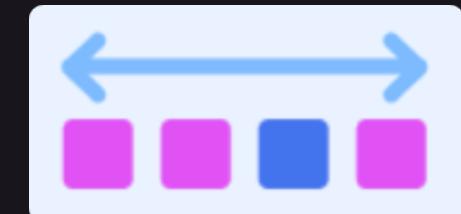
Large Language Models (LLMs)



- Large Language Models (LLMs)
 - Text content generators, trained on huge data sets (books, articles, websites, programming code, synthetic data, etc.)
 - Example: Llama 4 Maverick is trained on 22T tokens
 - Learn dozens of languages, grammar, text writing and coding
 - Fine-tuned to answer questions and follow instructions
 - Have parameters (capacity to remember information and relationships), e. g. 32B, 405B or 1.4T parameters
 - Examples: ChatGPT, Claude, Gemini, DeepSeek, Llama, Mistral

Tokens and Context Size

- **Tokens** == units of text, processed by the model
 - 1 token $\sim=$ 0.75 words (average)
 - 1 token == part of word / word / punctuation / whitespace
- **Context window size** is a key feature of LLMs
 - **The amount of text** (in tokens), processed when generating responses in the LLM
 - **Larger context** → can analyze longer input (e. g. summarize large books or process large source code)



The Context Window in LLMs is Limited

- **Context window size** in popular LLMs:

Model	Tokens In	Tokens Out	Words	Pages
Claude 4.5 Sonnet	1M	64K	750 000	1500
GPT-5-Codex	400K	128K	300 000	600
GPT-4.1	1.05M	33K	787 500	1575
Grok Code Fast 1	256K	10K	192 000	384
Gemini 2.5 Pro	1.05M	66K	787 500	1575
GLM 4.6	203K	203K	152 000	300
DeepSeek R1	164K	164K	123 000	246
Llama 4 Maverick	1.05M	1.05M	787 500	1575

Coding Models and Pricing (Sept 2025)

- Popular LLM models for coding:
 - Claude Sonnet 4.5, Claude Opus 4.1
 - OpenAI GPT-5-Codex, GPT-5, GPT 4.1
 - Gemini 2.5 Pro, Gemini 2.5 Flash
 - DeepSeek R1, DeepSeek V3.1
- Most powerful models are **expensive!**
 - Claude 4.5 Sonnet costs \$15 / Mil. Tokens
 - GTP 5 Codex costs \$10 / Mil. Tokens
- A simple app generation **prompt** takes **30K-50K tokens**



Tools, Reasoning and Agents

- **Tools** are external commands / services used by LLMs to perform tasks beyond text generation
 - For example, using tools, LLM can run **terminal commands**
 - ChatGPT uses tools to search Internet and draw charts
- **Reasoning models** (thinking models) simulate human-like logical thinking, planning and problem-solving
- **AI dev agents** use tools + reasoning to perform multi-step tasks
 - First, the agent **creates a plan**, using a reasoning model
 - Then, it **executes the plan** step-by-step: writes code, uses tools, runs the code, checks for errors, fixes bugs, etc.

Coding Models Benchmarks



- **CompileBench** – LLM benchmark for real-world projects
 - <https://compilebench.com>
- **LiveBench** – LLM benchmark for coding & agentic coding
 - <https://livebench.ai>
- **SWE Bench** – benchmark of AI systems on GitHub issues
 - <https://swebench.com>
- **OpenRouter LLM Rankings** – usage-based ranking
 - <https://openrouter.ai/rankings>

Prompt Engineering

- **Prompt engineering** == the skill to write **effective prompts** for the AI chatbot to get more accurate results
- Typical **AI prompt structure**:

Instruction / question / task / command - required

Context (description of a situation) - important, but optional

Input data / input conditions / examples - optional

Output data / conditions / instructions / format - optional

Persona / emotional tone / style of expression - optional

Prompt Engineering – Example

Instruction / question / task / command - required

Context (description of a situation) - important, but optional

Input data / input conditions / examples - optional

Output data / conditions / instructions / format - optional

Persona / emotional tone / style of expression - optional

Create a countdown timer app.

During a conference, speakers are limited in time, so I need an app to display their remaining time on a tablet, with very large letters.

Users select minutes and seconds, then start the timer to count down.

Time left should refresh every second. When the time is up, display a blinking “Time is over!” message.

Act as a pragmatic JavaScript developer, with excellent UI and UX skills.

Prompt Engineering – Example (2)



Context (description of a situation) - important, but optional

Persona / emotional tone / style of expression - optional

Instruction / question / task / command - required

Input data / input conditions / examples - optional

Output data / conditions / instructions / format - optional

During a conference, speakers are limited in time, so I need an app to display their remaining time on a tablet, with very large letters.

Act as a pragmatic business analyst, with excellent UI and UX skills.

Create a product requirement document (PRD) for a countdown timer app.

Users select minutes and seconds, then start the timer to count down.

Time left should refresh every second. When the time is up, display a blinking “Time is over!” message.

Break

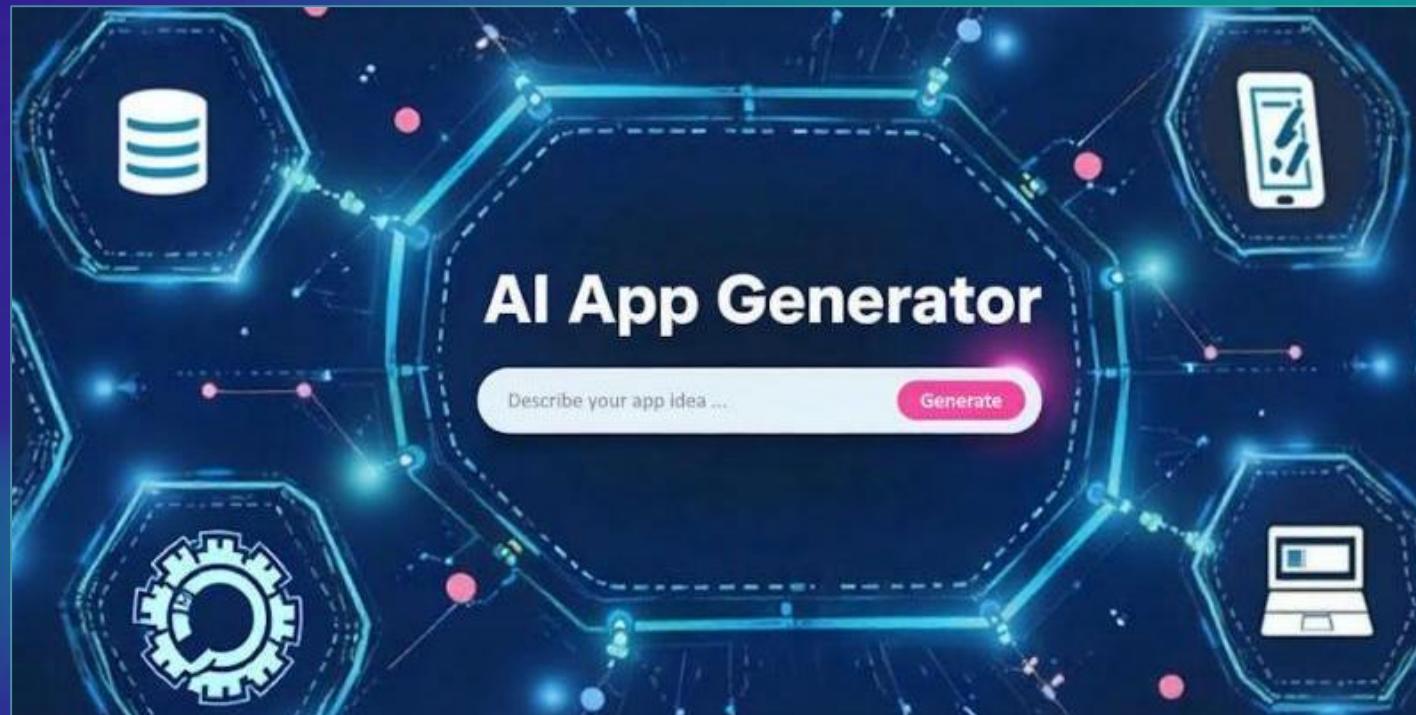
(10 minutes)

Start timer



Intro to Vibe Coding

App Development with AI Prompts
(without Coding)



What is Vibe Coding?

- **Vibe coding** == creating apps using **AI prompts**, without writing the code
 - You write a sequence of **AI prompts** (like in ChatGPT)
 - **AI writes the code** for you, runs, tests, fixes bugs, etc.
- Vibe coding **platforms** (AI dev environments)
 - For **hobbyists**: **Bolt**, **Lovable**, **Replit**, **v0**, **Firebase Studio**
 - Quite simplified, cloud-based, running in the browser
 - For **professionals**: **GitHub Copilot**, **Cursor**, **Claude Code**
 - Installed locally, more complex, quite more powerful



ChatGPT / Claude for App Building



- ChatGPT, Claude and Gemini generate simple Web pages but not fully-functional apps:

The screenshot shows a web browser window with three tabs open, each displaying a different AI-generated loan calculator.

- Left Tab (ChatGPT 4.1):** A text-based interface where the user asks ChatGPT to "Create a loan calculator in HTML + JS: enter the loan amount, the interest rate, and the number of months, then display the repayment schedule (amortization table)." ChatGPT responds with a simple text-based calculator description and lists its features: User enters Loan Amount, Interest Rate, and Term in Months. When they click "Calculate," it displays the results.
- Middle Tab (Loan Calculator):** A text-based interface where the user asks Gemini to "Create a loan calculator in HTML + JS: enter the loan amount, the interest rate, and the number of months, then display the repayment schedule." Gemini responds with a detailed description of the calculator's features and a link to an "Interactive artifact" titled "HTML Loan Repayment Calculator".
- Right Tab (Loan Calculator):** A text-based interface where the user asks Claude to "Create a loan calculator in HTML + JS: enter the loan amount, the interest rate, and the number of months, then display the repayment schedule." Claude responds with a detailed description of the calculator's features and a link to an "Interactive artifact" titled "HTML Loan Repayment Calculator".

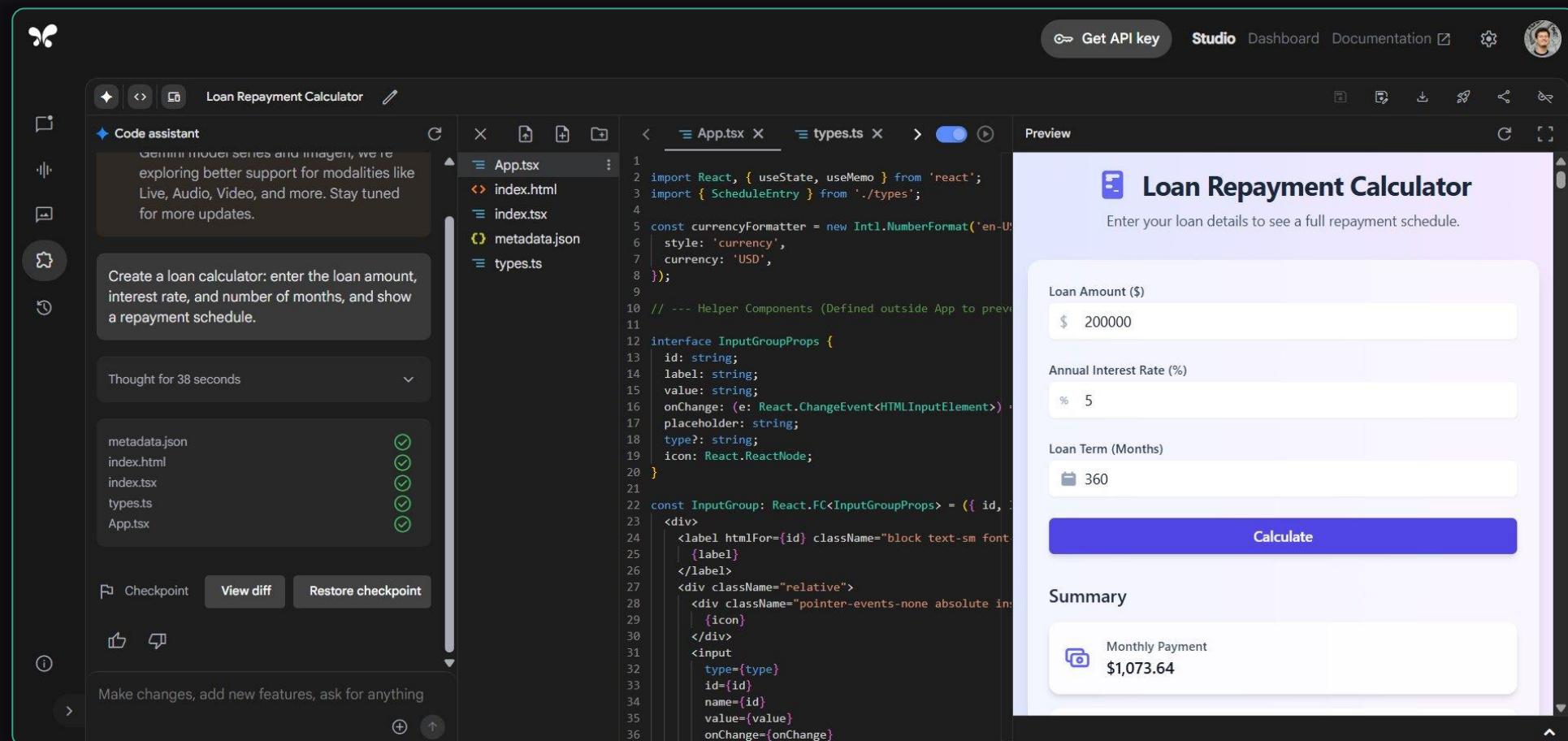
<https://chatgpt.com/canvas/shared/68c047dd12088191a642806ac75e9630>

<https://g.co/gemini/share/6c27a5e20f1c>

<https://claude.ai/share/e24e1c6a-af00-483b-bdcc-0f8c069ea3a3>

Google AI Studio: App Builder

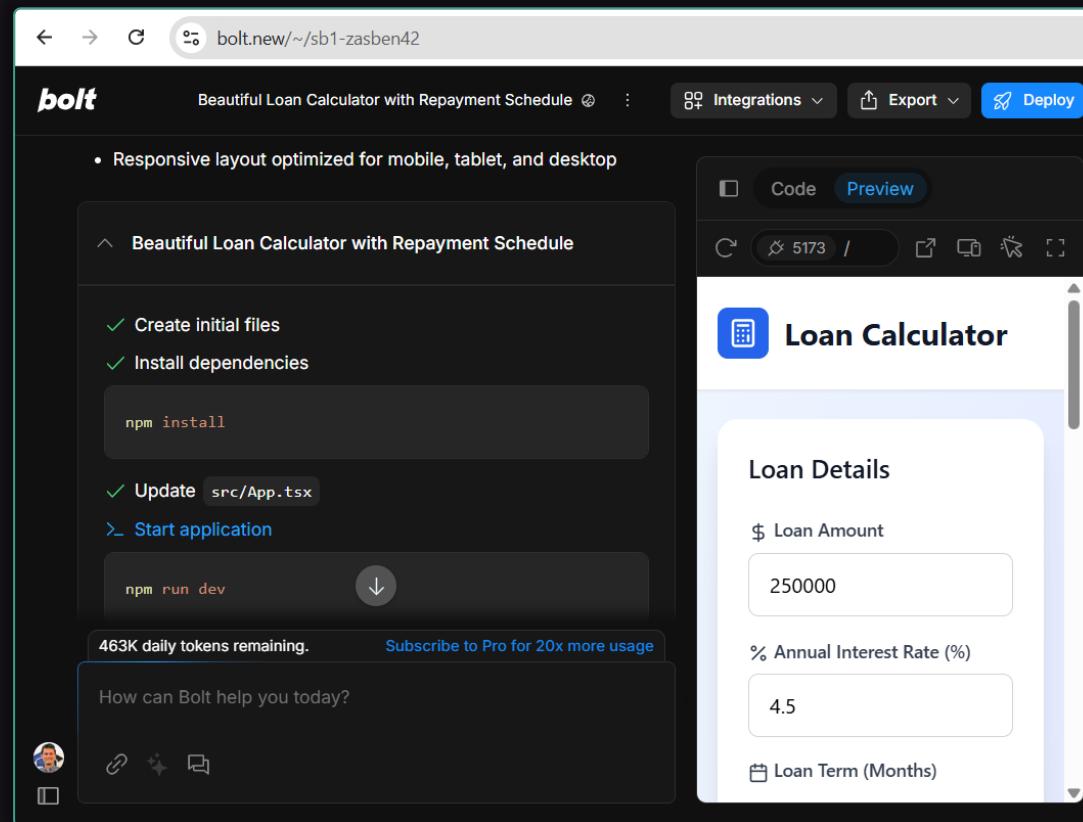
- Google AI Studio app builder generates multi-file apps:



<https://aistudio.google.com/app/apps/drive/1hK-OIEcfAxJZPmU7oj81Oygkuzr8pW3n>

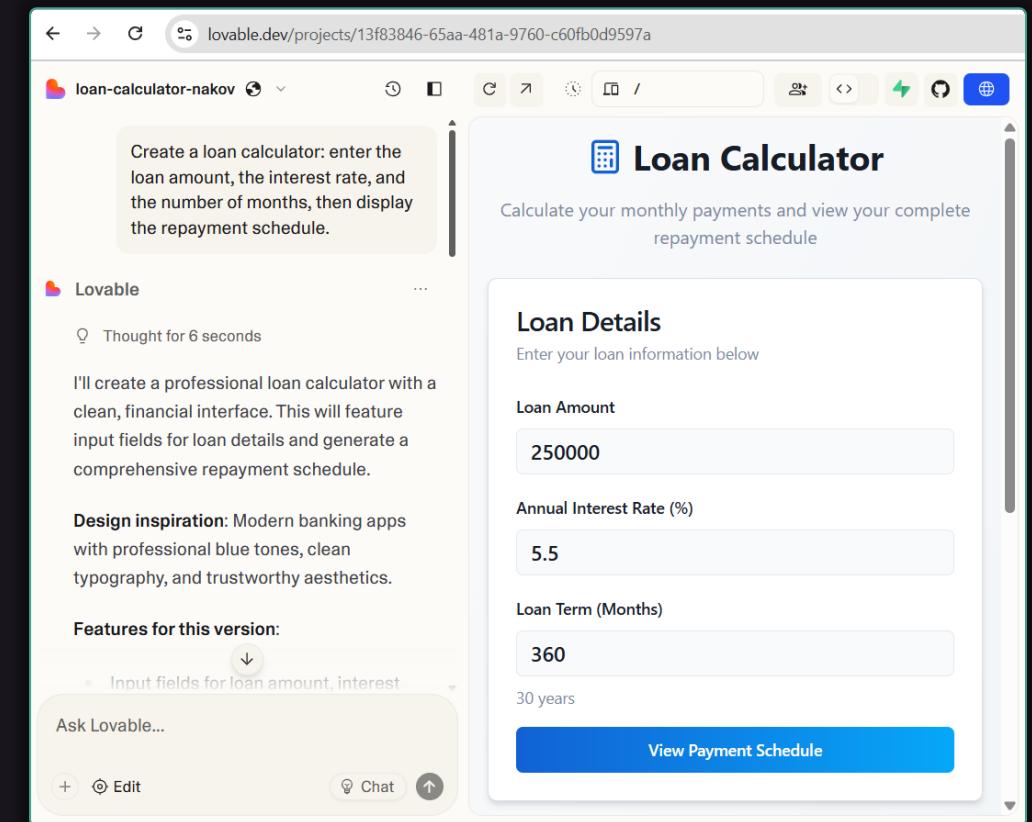
Bolt, Lovable, Firebase Studio

- Hobby vibe coding platforms like **Bolt**, **Lovable**, **Replit** and **Firebase Studio** build, run, fix and deploy simple apps



The Bolt interface shows a "Beautiful Loan Calculator with Repayment Schedule" project. It includes a preview of the app's user interface, which features a "Loan Details" form with fields for "Loan Amount" (250000), "Annual Interest Rate (%)" (4.5), and "Loan Term (Months)". The interface is described as responsive for mobile, tablet, and desktop. The sidebar lists steps: "Create initial files", "Install dependencies", "npm install", "Update src/App.tsx", and "Start application". A deployment section shows "npm run dev". A message at the bottom says "How can Bolt help you today?".

<https://bolt.new/~sb1-zasben42>



The Lovable interface shows a "loan-calculator-nakov" project. It features a "Loan Calculator" page with a "Loan Details" form for entering loan amount (250000), annual interest rate (5.5%), and loan term (360 months). The page also includes a "Features for this version:" section and a "View Payment Schedule" button. A sidebar on the left provides project details and a chat interface with the AI, Lovable.

<https://lovable.dev/projects/13f83846-65aa-481a-9760-c60fb0d9597a>

Professional AI-Assisted Coding

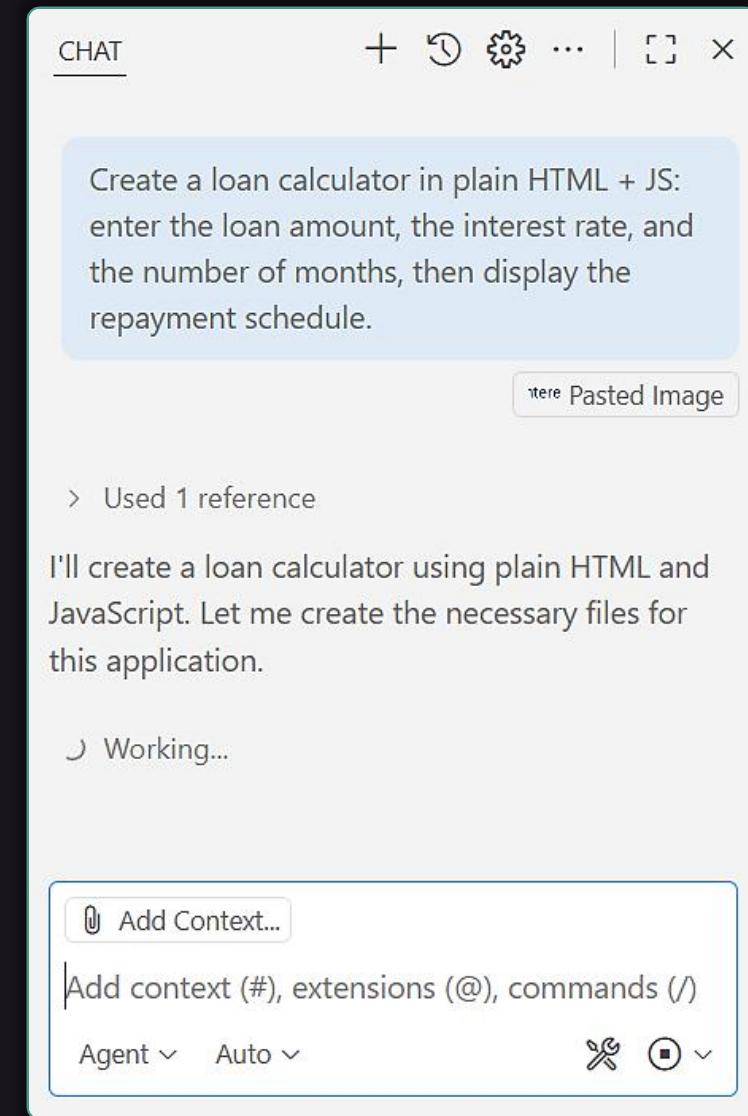


- **AI-assisted coding platforms** for professional developers:
 - Support AI coding in **multiple languages**, various dev stacks, with **AI-assisted coding** and **AI dev agents**
- Interactive coding agents with **human-in-the-loop**:
 - GitHub Copilot, Cursor, Augment Code, Windsurf, Cline, Roo Code, Kilo Code, Amazon Q Developer, Junie, Tabnine, Trae AI, Void AI, Continue Dev, Zed AI, Aider, Sweep AI, ...
- **Fully-autonomous** AI software engineering agents:
 - Claude Code, ChatGPT Codex, Gemini CLI, Replit Agent, Bolt Agent, Lovable Agent, v0 Agent, Devin, Refact, ...

GitHub Copilot



- GitHub Copilot (+ VS Code)
 - Professional AI dev environment with powerful AI dev agent
 - Natively integrated into VS Code (the world's most widely used IDE)
 - Huge popularity: 68% of developers use Copilot, 20M users (Sept 2025)
 - Free license for students: GitHub Pro for 2 years (after verifying academic status)
 - Chat modes: Agent / Ask / Edit
 - <https://github.com/features/copilot>



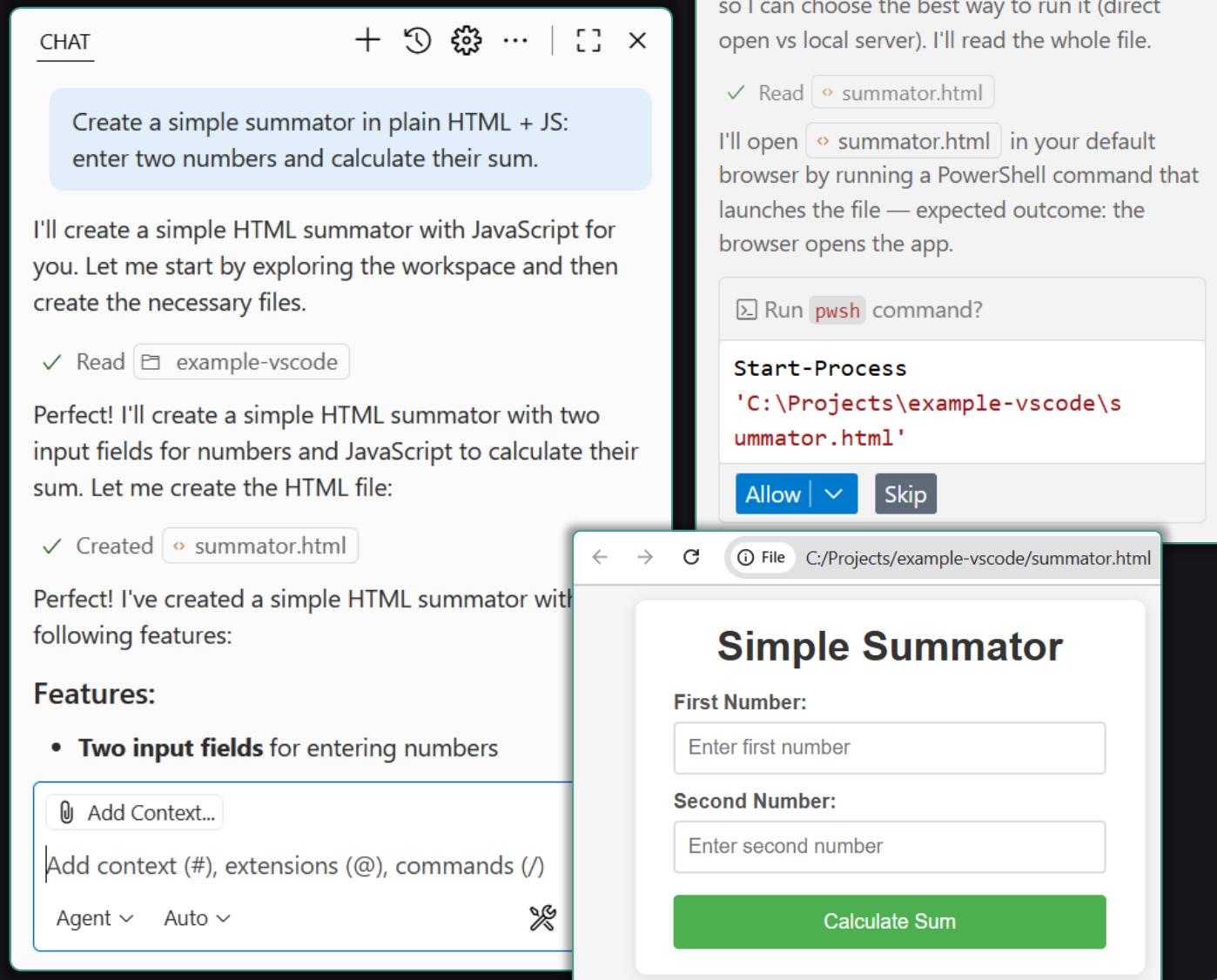
GitHub Copilot – Live Demo

- Open VS Code
- Type this **prompt** in GitHub Copilot:

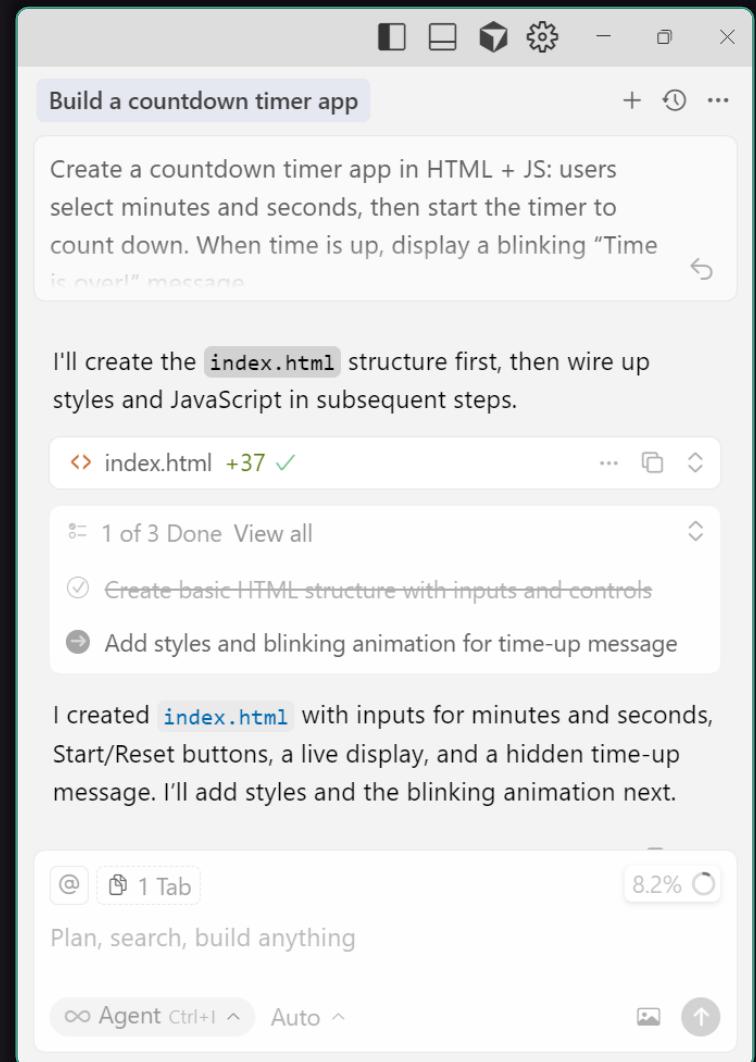
Create a simple summator in plain HTML + JS: enter two numbers and calculate their sum.

- Wait for the app to be generated → **start** it

run the app



- Cursor AI IDE
 - Popular **AI-first** dev environment
 - 1M users, \$500M ARR (Sept 2025)
 - Chat modes: **Agent / Ask / Background**
 - **AI dev agent** for multi-step tasks
 - Separate IDE, not VS Code plugin
 - The **free plan** is highly **limited**
 - <https://cursor.com>



Cursor – Live Demo

- Open Cursor
- Type this **prompt**:

Create a simple summator
in plain HTML + JS:
enter two numbers and
calculate their sum.

- Wait for the app to be generated → **start** it

run the app

The screenshot shows the Cursor interface with the following components:

- Top Bar:** "Create a simple summator" with icons for "+" (New), a clock (Timer), and three dots (More).
- Input Area:** "run the app" (disabled)
- Text Area:** "Thought for 10s" (disabled)
- Code Area:** "I'll open the `index.html` in your default browser from the project directory."
- Run Command Area:** "Run command: start" (disabled), "\$ `start .\index.html`", "Skip", "Add 'start' to Allowlist", "Run"
- Bottom Left:** "index.html" (file path), "@ Add Context", "6.4%", "Plan, search, build anything", "Ctrl+I", "Auto", "Image", "Close"
- Bottom Right:** Browser window titled "Simple Summator" showing inputs for "Number A" (3) and "Number B" (5), a "Calculate" button, and a result "Sum: 8".

Installing GitHub Copilot

Installing and Configuring VS Code + GitHub Copilot

The screenshot shows the VS Code interface with the GitHub Copilot extension installed. On the left, the sidebar includes icons for search, repository, file navigation, cloning, connecting, and generating workspaces. The main area has a 'Walkthroughs' section with three cards: 'Get started with VS Code' (selected), 'GitHub Copilot', and 'Learn the Fundamentals'. The 'Get started with VS Code' card contains the text: 'Customize your editor, learn the basics, and start coding'. To the right, there's a large callout for 'Build with agent mode.' featuring a speech bubble icon, with the text: 'AI responses may be inaccurate. Generate instructions to onboard AI onto your codebase.' At the bottom right, there's a 'Add Context...' button and a placeholder text: 'Add context (#), extensions (@), commands (/)'.

- Start
 - New File...
 - Open File...
 - Open Folder...
 - Clone Git Repository...
 - Connect to...
 - Generate New Workspace...

Walkthroughs

- Get started with VS Code**
Customize your editor, learn the basics, and start coding
- Github Copilot
- Learn the Fundamentals

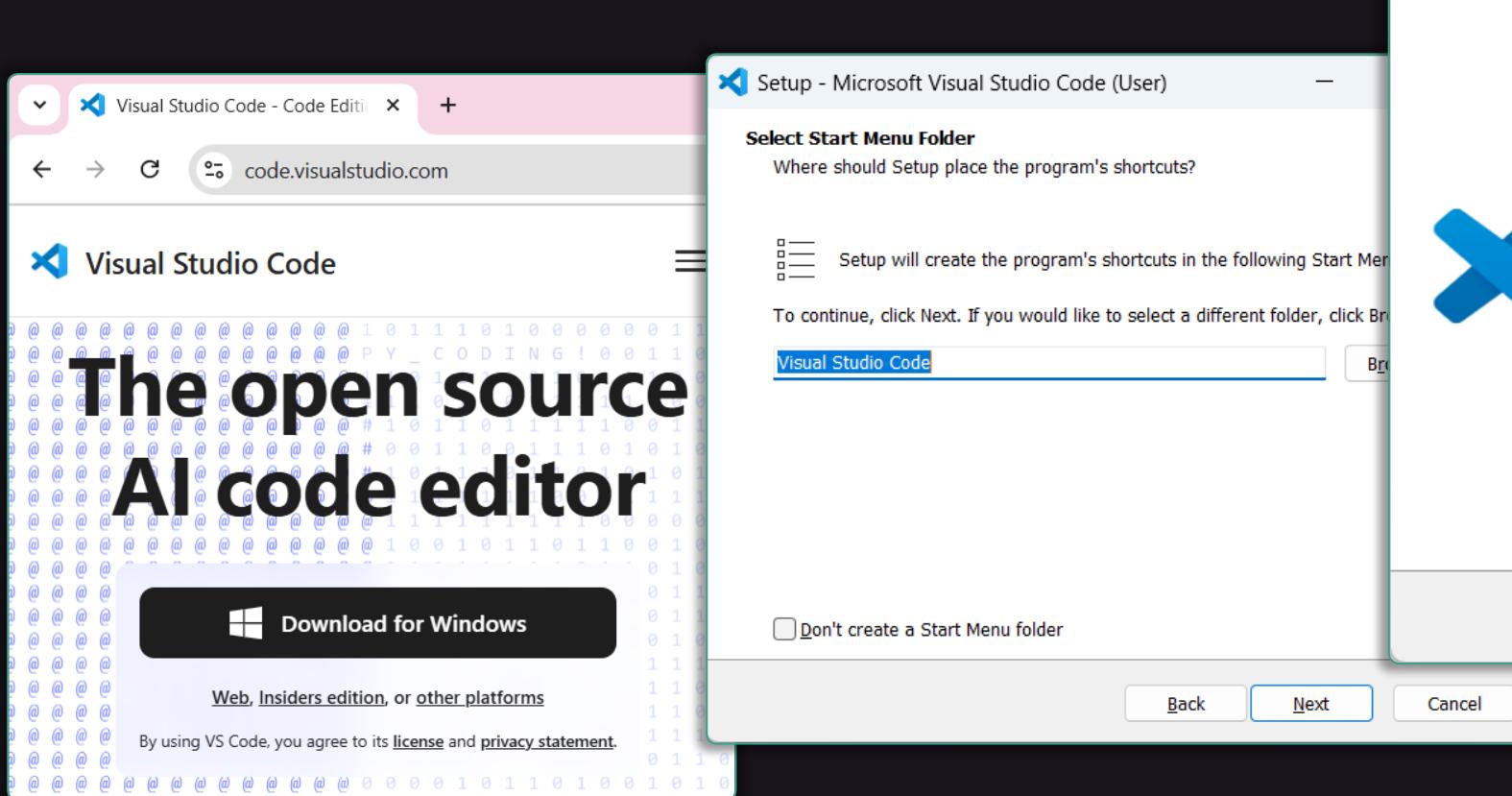
Build with agent mode.

AI responses may be inaccurate.
Generate instructions to onboard AI onto your codebase.

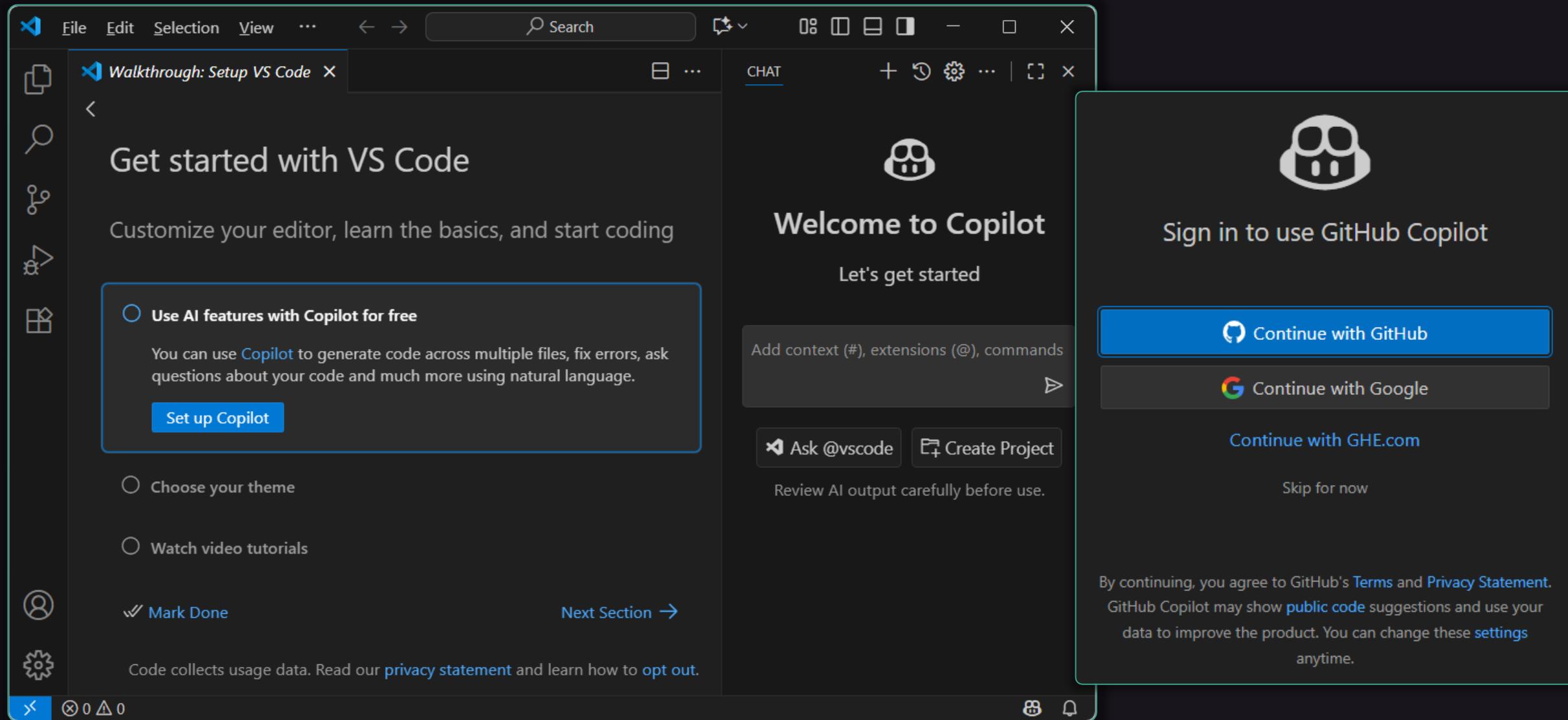
Add Context...
Add context (#), extensions (@), commands (/)

Installing Visual Studio Code

- Download and install VS Code (Visual Studio Code) from:
 - <https://code.visualstudio.com>



Setup GitHub Copilot in VS Code



The screenshot shows the VS Code interface with the GitHub Copilot setup process. On the left, the 'Get started with VS Code' sidebar lists several options: 'Use AI features with Copilot for free' (selected), 'Choose your theme', 'Watch video tutorials', and 'Mark Done'. A 'Set up Copilot' button is highlighted with a blue border. At the bottom, a note states: 'Code collects usage data. Read our [privacy statement](#) and learn how to [opt out](#)'. On the right, the 'Welcome to Copilot' screen displays a 'Let's get started' section with a 'Add context (#), extensions (@), commands' input field and 'Ask @vscode' and 'Create Project' buttons. Below this, a note says: 'Review AI output carefully before use.' A large callout box on the right side contains the text: 'Sign in to use GitHub Copilot' with three buttons: 'Continue with GitHub' (highlighted in blue), 'Continue with Google', and 'Continue with GHE.com'. At the bottom of the callout box, a note reads: 'By continuing, you agree to GitHub's [Terms](#) and [Privacy Statement](#). GitHub Copilot may show [public code](#) suggestions and use your data to improve the product. You can change these [settings](#) anytime.'

Register / Login in GitHub

github.com/signup?get_started_with=copilot-vscode&return_to=%2Flogin%2Foauth%2Fauthorize%3Fclient_id%3D01ab8ac9400c4e429b23%26get_st...

You're one step away from GitHub Copilot in VS Code

To get started, create a free GitHub account and start coding with AI today.

Here's what GitHub Copilot can help you do:

- ✓ Write code faster and smarter with AI-powered suggestions ranging from single lines to entire functions
- ✓ Use natural language chat and agent mode to ask questions, get explanations, and complete complex, multi-step development tasks

With Copilot Free, you also get:

- ✓ 50 chat or agent mode requests per month
- ✓ 2,000 code completions per month
- ✓ Access to Claude 3.5 Sonnet, GPT-4.1, and more

GitHub Copilot Free, Pro and Pro+ may show [public code](#) suggestions and we may use your data for product improvement. You can change these [settings](#) at any time.



Already have an account? [Sign in](#)

Sign up for GitHub

 Continue with Google

or

Email*

steve-nak@nakov.com 

Password*

Password should be at least 15 characters OR at least 8 characters including a number and a lowercase letter.

Username*

steve-nak 

Username may only contain alphanumeric characters or single hyphens, and cannot begin or end with a hyphen.

Your Country/Region*

Bulgaria 

For compliance reasons, we're required to collect country information to send you occasional updates and announcements.

Select user to authorize Visual Studio Code



Signed in as
steve-nak

[Continue](#)

[Use a different account](#)



Authorize Visual Studio Code



Visual Studio Code by [Visual Studio Code](#)
wants to access your steve-nak account



Personal user data
Email addresses (read-only)

[Cancel](#)

[Authorize Visual-Studio-Code](#)

Authorizing will redirect to
<https://vscode.dev>

Welcome to VS Code + GitHub Copilot!



The screenshot shows the VS Code interface with the GitHub Copilot extension integrated. The left sidebar has icons for file operations like New File..., Open File..., and Clone Git Repository...; a user icon; and settings. The main area has a 'Welcome' tab selected. A 'Walkthroughs' section includes 'Get started with VS Code' (Customize your editor, learn the basics, and start coding), 'GitHub Copilot' (with a 'Connect to...' button), and 'Learn the Fundamentals'. A large 'CHAT' tab is open on the right, showing a message input field with 'Add Context...', a context menu with 'Add context (#), extensions (@), commands (/)', and dropdowns for 'Agent' (set to 'GPT-4.1') and 'Model' (set to 'GPT-4.1'). Below the CHAT tab are icons for a keyboard, a bell, and a refresh.

File Edit Selection View ... ← → Search CHAT

Welcome

Start

New File...

Open File...

Open Folder...

Clone Git Repository...

Connect to...

Generate New Workspace...

Walkthroughs

Get started with VS Code
Customize your editor, learn the basics, and start coding

GitHub Copilot

Learn the Fundamentals

Show welcome page on startup

Add Context...

Add context (#), extensions (@), commands (/)

Agent GPT-4.1

Keyboard Bell Refresh

Install Node.js



- **Node.js** is a local JavaScript runtime for developers
 - <https://nodejs.org>

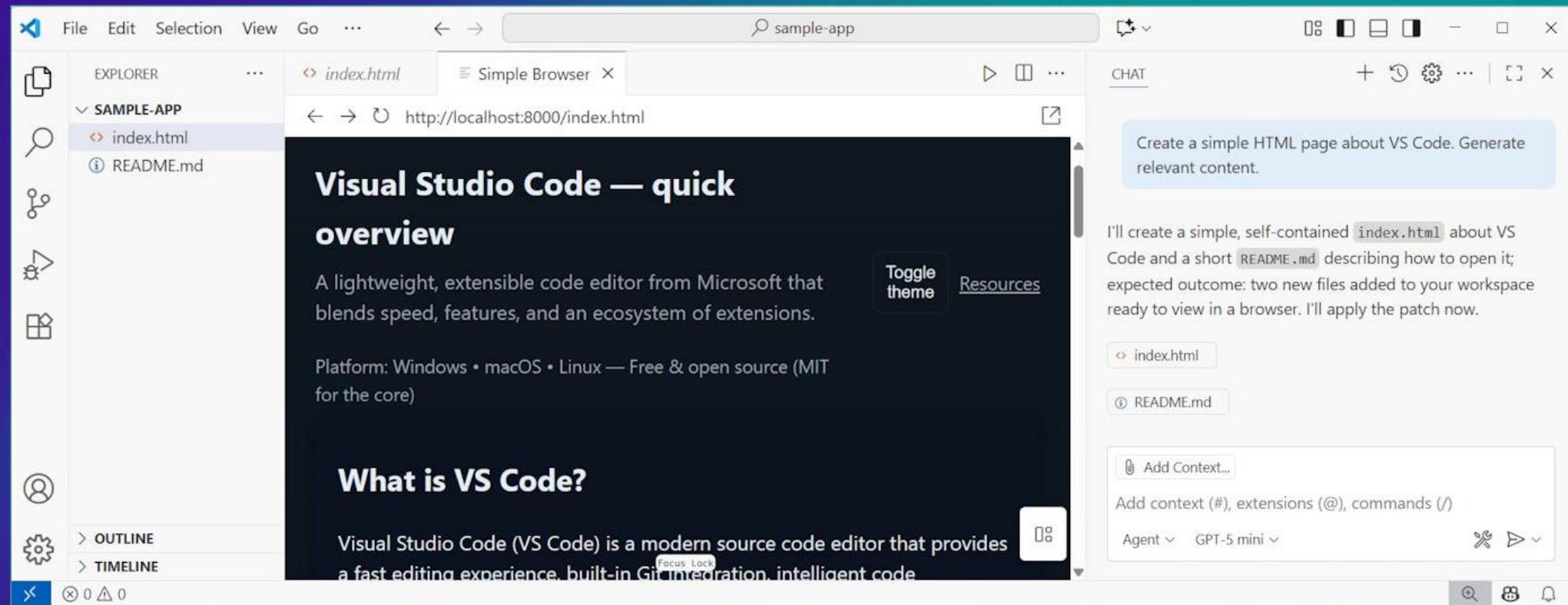


Or get a prebuilt Node.js® for **Windows** running a **x64** architecture.

Windows Installer (.msi)

Standalone Binary (.zip)

Vibe Coding Your First App with GitHub Copilot



VS Code – Overview

- VS Code is modern development IDE  Visual Studio Code
 - In VS Code, developers write code, execute the code, debug and bug fix the code, test the code, bundle and deploy apps
 - Extensions to support multiple languages / technologies
 - HTML, CSS, JavaScript, Python, C#, Java, PHP, C++, SQL, ...
 - Docker, Azure, AWS, Markdown, Jupiter, Supabase, ...
 - Integrated GitHub Copilot for AI-assisted coding
 - <https://code.visualstudio.com>

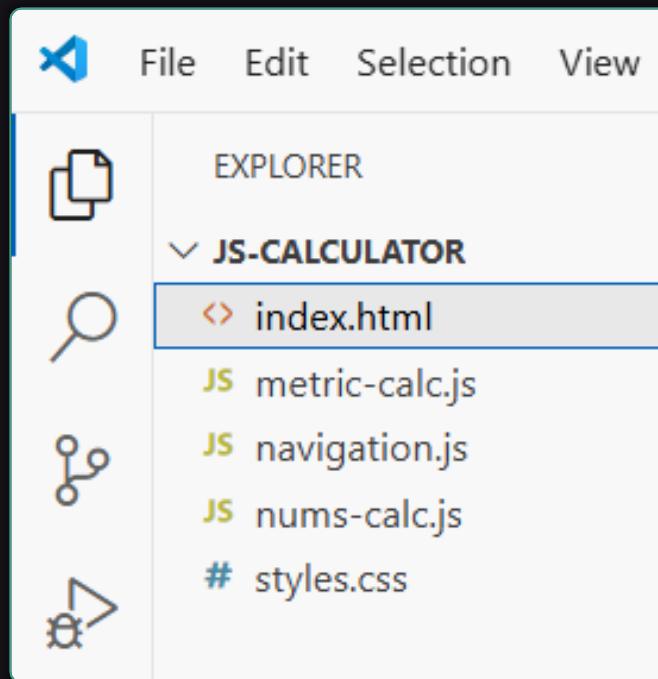
VS Code with GitHub Copilot



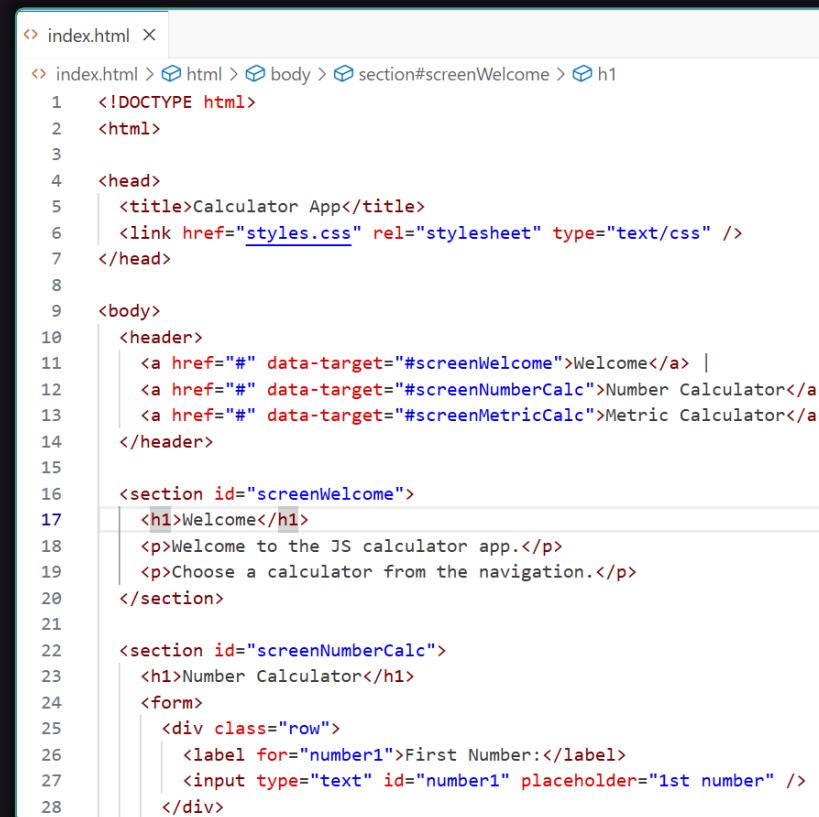
The screenshot shows the Visual Studio Code interface with the AI Chat feature integrated. The top bar includes File, Edit, Selection, View, and a search bar. The left sidebar has icons for file operations like New File..., Open File..., and GitHub Copilot. The main area displays 'Walkthroughs' with options like 'Get started with VS Code' (selected), 'GitHub Copilot', and 'Learn the Fundamentals'. A large 'CHAT' button is visible on the right, which is highlighted with a blue border. Below it, a message says 'Build with agent mode.' with a note about AI responses being inaccurate. A context input field allows users to add context for the AI, with suggestions for hashtags, extensions, and commands. The bottom right corner shows the AI Agent dropdown set to GPT-4.1.

VS Code – Features

Code explorer



Code editor

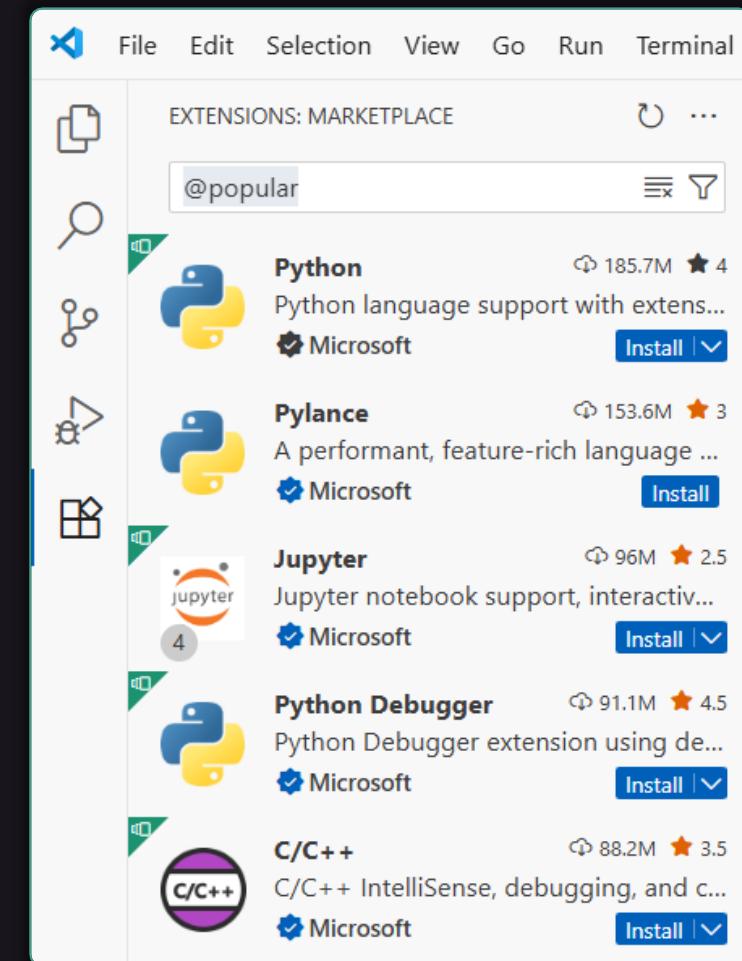


```
<!DOCTYPE html>
<html>
<head>
    <title>Calculator App</title>
    <link href="styles.css" rel="stylesheet" type="text/css" />
</head>
<body>
    <header>
        <a href="#" data-target="#screenWelcome">Welcome</a> | 
        <a href="#" data-target="#screenNumberCalc">Number Calculator</a>
        <a href="#" data-target="#screenMetricCalc">Metric Calculator</a>
    </header>

    <section id="screenWelcome">
        <h1>Welcome</h1>
        <p>Welcome to the JS calculator app.</p>
        <p>Choose a calculator from the navigation.</p>
    </section>

    <section id="screenNumberCalc">
        <h1>Number Calculator</h1>
        <form>
            <div class="row">
                <label for="number1">First Number:</label>
                <input type="text" id="number1" placeholder="1st number" />
            </div>
        </form>
    </section>
</body>
</html>
```

Extensions



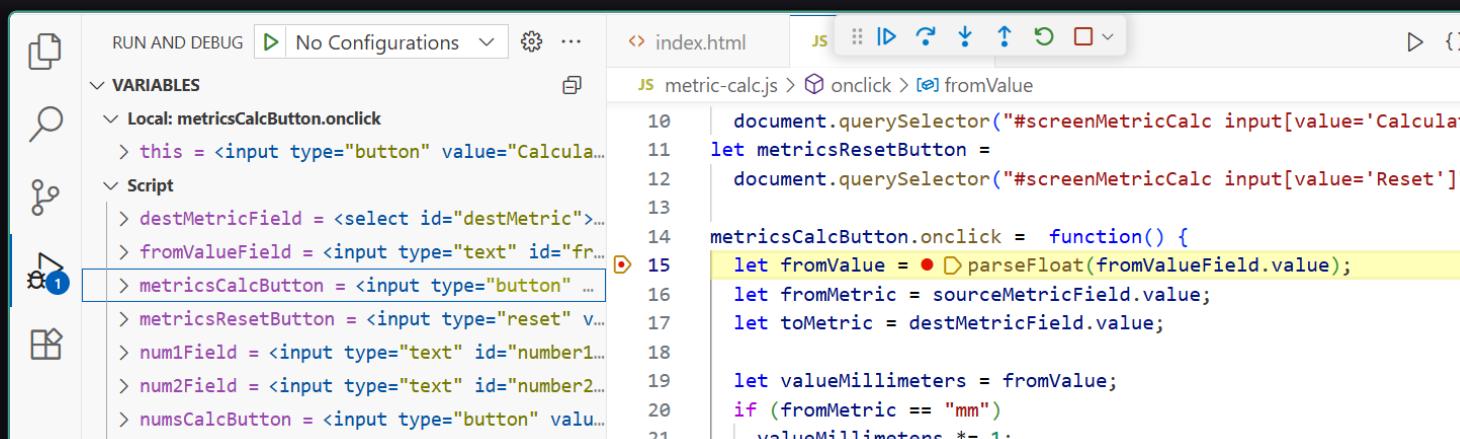
Extension	Downloads	Rating	Action
Python	185.7M	4	Install
Pylance	153.6M	3	Install
Jupyter	96M	2.5	Install
Python Debugger	91.1M	4.5	Install
C/C++	88.2M	3.5	Install

VS Code – Features (2)

- Terminal for running command-line tools

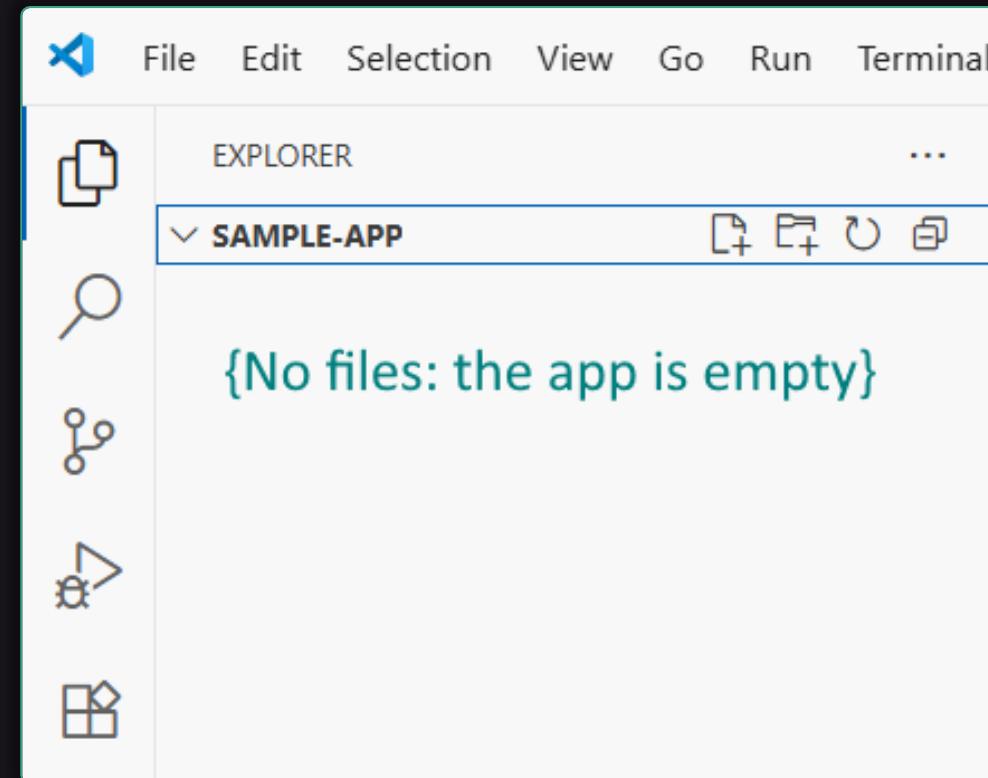
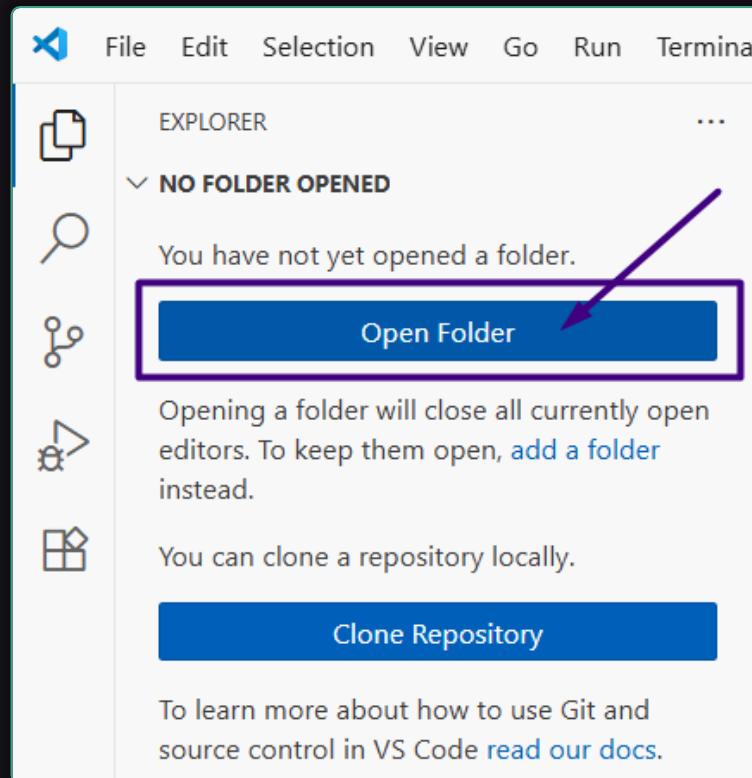


- Debugger for tracing code execution and finding bugs



Creating a New Project

- In VS Code **projects** are structured in **folders**
- Create a **new folder** and **open the folder** to start coding

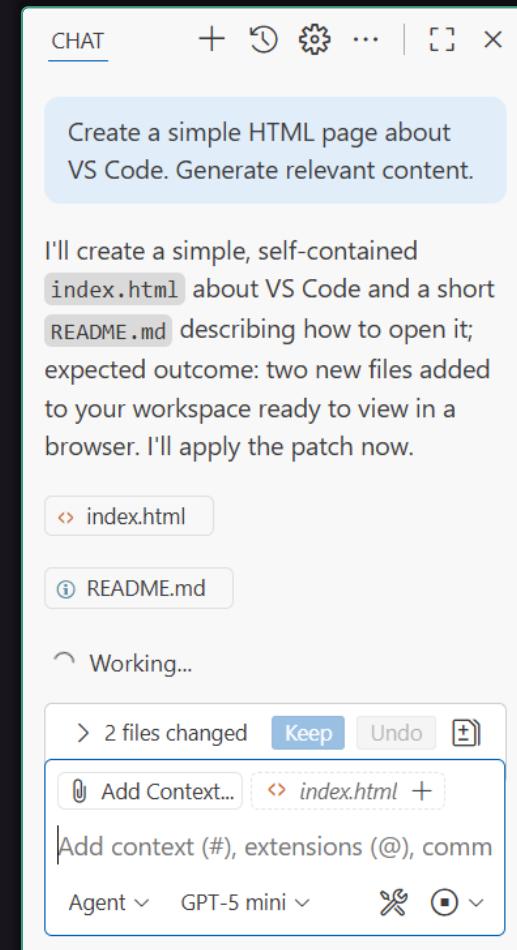
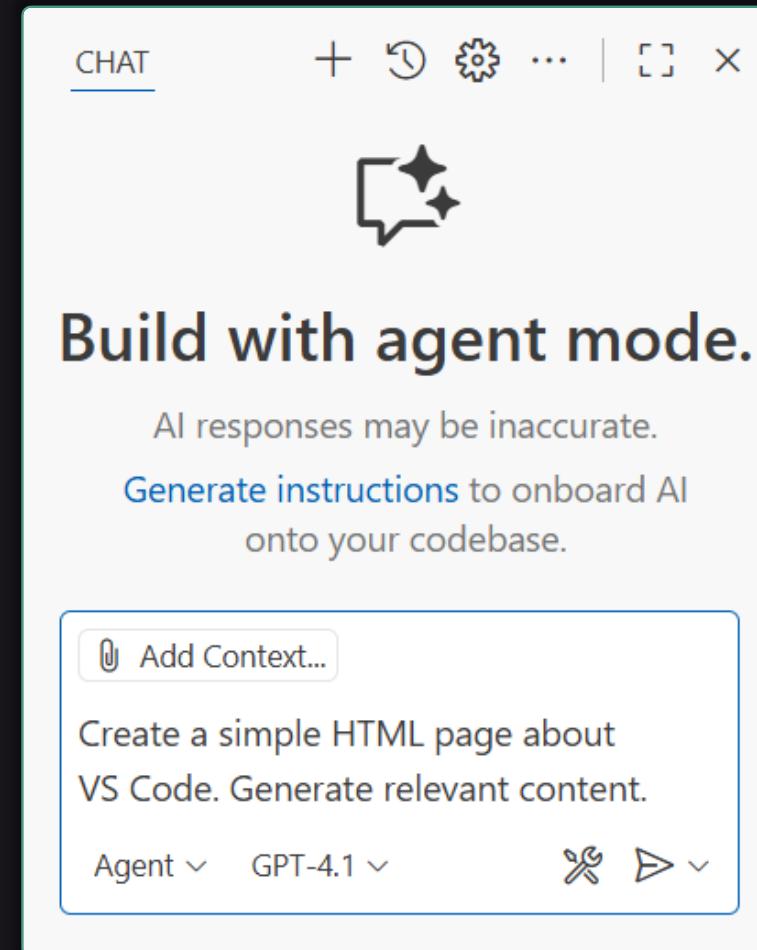


Vibe Coding a HTML Page

- Type this sample **prompt** in the GitHub Copilot chat:

Create a **simple** HTML page about VS Code. Generate relevant content.

- Wait** for the Web page to be generated
- Accept** the proposed changes



View the Vibe-Coded HTML Page



- **Open** the page in the Web browser:

View this HTML page

The screenshot shows a web browser window with the following details:

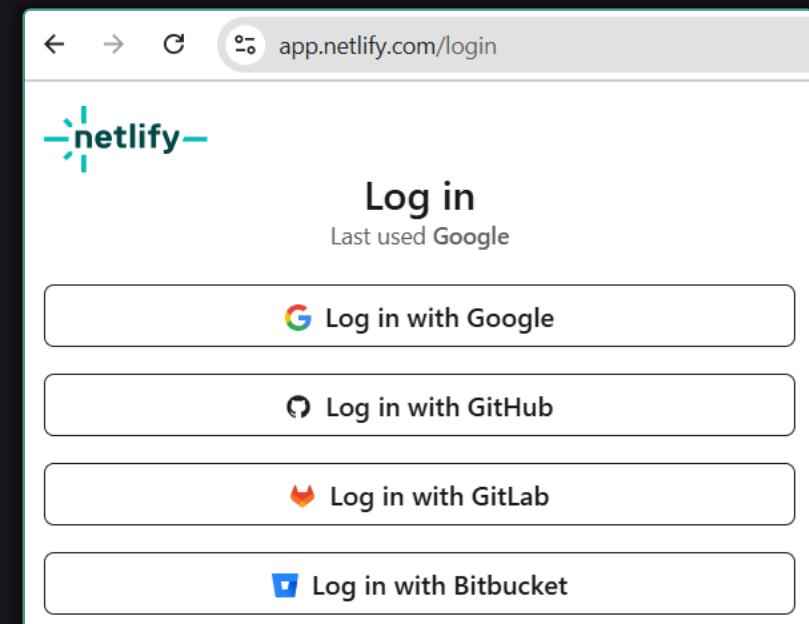
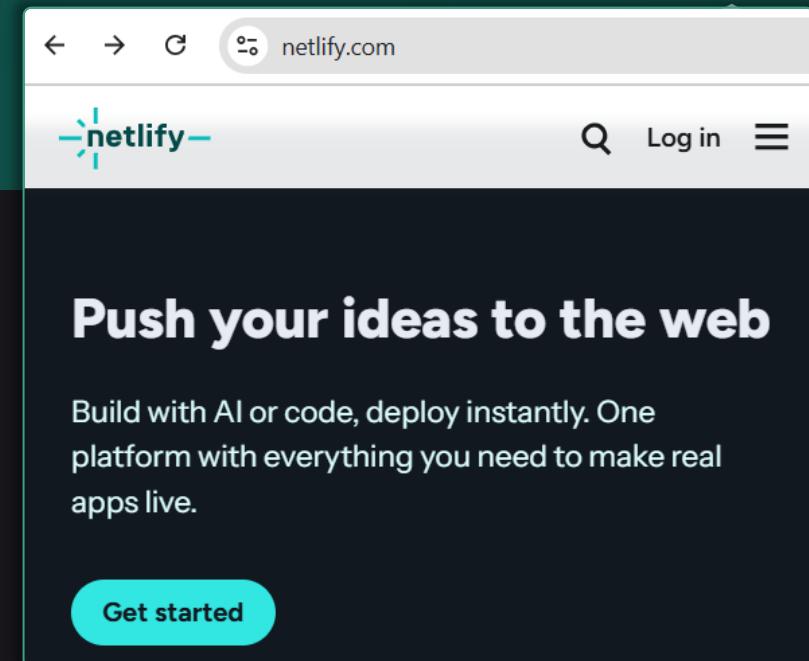
- Address bar: C:/Work/sample-app/about-vscode.html
- Title bar: File (highlighted)
- Content area:
 - # About Visual Studio Code
 - Visual Studio Code** (VS Code) is a free, open-source code editor developed by Microsoft. It is available for Windows, macOS, and Linux, and is widely used by developers for its speed, flexibility, and powerful features.
 - ## Key Features

 - Intelligent code completion (IntelliSense)
 - Built-in Git integration
 - Debugging support
 - Extensive extension marketplace
 - Customizable themes and layouts
 - Support for many programming languages
 - ## Why Use VS Code?

The screenshot shows a Microsoft Edge browser window. At the top left is a blue 'CHAT' button. To its right are icons for a plus sign, a clock, a gear, three dots, a square, and an 'X'. A blue rounded rectangle button labeled 'view this HTML page' is positioned at the top right. The main content area contains a message from the AI: 'I'll open and read the <about-vscode.html> file so I can show you its contents and provide quick options to view it in a browser (local or in-editor). I'll read the whole file now and return the contents.' Below this message is a green checkmark icon followed by the text 'Read <about-vscode.html>'. Another message follows: 'I'll open the HTML file in your default browser now by running a PowerShell command that launches the file. Expected outcome: your system's default browser will open and display <about-vscode.html>.' A modal dialog box is overlaid on the page, containing a question 'Run pwsh command?' with an unchecked checkbox, and a 'Start-Process' command line: 'c:\Work\sample-app\about-vscode.html'. At the bottom of the dialog are 'Allow' and 'Skip' buttons. At the very bottom of the browser window, there is a toolbar with a 'Add Context...' button, a link to 'about-vscode.html', and a '+' sign. Below this toolbar, the text 'Add context (#), extensions (@), commands (/)' is displayed. At the bottom right are buttons for 'Agent', 'GPT-5 mini', and icons for 'X', 'Copy', and 'Share'.

Deployment to Netlify

- To **publish the app** on the Internet, we need to **deploy it** somewhere
- **Netlify** is a popular cloud-based app hosting service: <https://netlify.com>
 - **Free plan**, ideal for simple sites and vibe-coded apps
- **Register** a free Netlify account
 - <https://app.netlify.com/signup>



Deployment with Copilot to Netlify



1. Type this simple **prompt** in the GitHub Copilot chat:

Deploy this app to Netlify.

2. Authorize Netlify-CLI with Netlify

A screenshot of a terminal window from a code editor. The tabs at the top are PROBLEMS, OUTPUT, DEBUG CONSOLE, TERMINAL (which is selected), PORTS. Below the tabs, the terminal shows:

```
PROBLEMS      OUTPUT      DEBUG CONSOLE      TERMINAL      PORTS      powershell      +      -      ...      [ ]      X
Logging into your Netlify account...
Opening https://app.netlify.com/authorize?response_type=ticket&ticket=3693b4ad5cda59c5a746c3dba3a9a5dd
: Waiting for authorization...
```

A modal window titled "Authorize Application" is open over the terminal. It contains:

An application named Netlify CLI is asking for permission to access Netlify on your behalf.

This app will be able to create and manage projects in your Netlify teams. You can revoke access at any time.

Please review the details below before authorizing access:

Redirect URI `urn:ietf:wg:oauth:2.0:oob`

Description `Netlify's next generation CLI. https://github.com/netlify/cli`

Buttons: Authorize (highlighted in blue) and Deny.

A screenshot of the GitHub Copilot chat interface. The top bar includes buttons for CHAT (which is selected), a plus sign, a clock, a gear, three dots, and close/minimize/maximize. The main area has a message bubble containing:

Deploy this app to Netlify.

I'll help you deploy your app to Netlify. First, let me examine the current structure and content of your app to understand what we're working with.

✓ Read `index.html`, lines 1 to 50
✓ Read `script.js`, lines 1 to 30
✓ Read `styles.css`, lines 1 to 30

Great! I can see you have a Bathroom Tile Calculator app with HTML, CSS, and JavaScript files. Now I'll help you deploy it to Netlify. There are several ways to deploy to Netlify, but I'll show you the simplest method using drag-and-drop deployment.

Deployment with Copilot to Netlify (2)



3. Configure the deployment settings:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS node + ⌂ ⚡ ... [ ] X  
PS C:\Work\sample-app> netlify deploy --prod --dir=.  
  
To create and deploy in one go, use: netlify deploy --create-site <SITE_NAME> --dir . --prod  
? What would you like to do?  
→ Link this directory to an existing project  
> + Create & configure a new project  
  
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS node + ⌂ ⚡ ... [ ] X  
PS C:\Work\sample-app> netlify deploy --prod --dir=.  
  
To create and deploy in one go, use: netlify deploy --create-site <SITE_NAME> --dir . --prod  
? What would you like to do? + Create & configure a new project  
? Team: SoftUni Nakov  
? Project name (leave blank for a random name; you can change it later): bathroom-calculator
```

4. Now your app is live on the Internet

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS powershell + ⌂ ⚡ ... [ ] X  
PS C:\Work\sample-app> netlify deploy --prod --dir=.  
  
◆ Production deploy is live ◆  
  
Deployed to production URL: https://bathroom-calculator.netlify.app  
Unique deploy URL: https://68dee1b4d242173083d5bbc7--bathroom-calculator.netlify.app
```

Break

(10 minutes)

Start timer



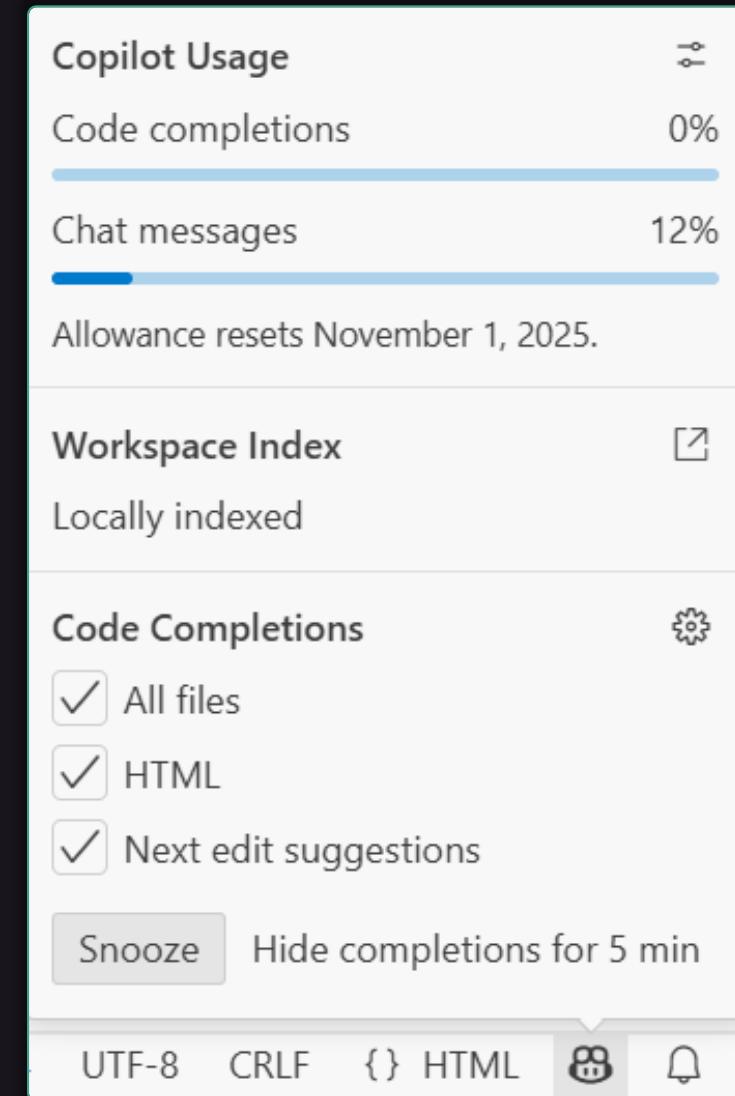
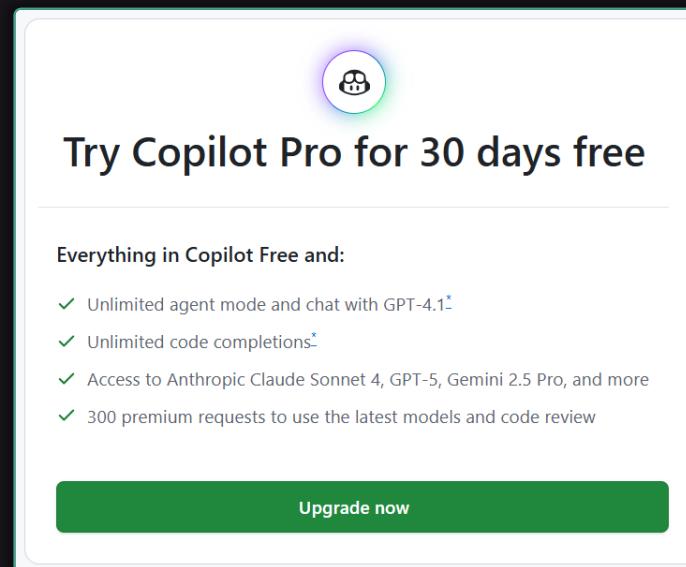
GitHub Copilot Pricing

Free vs. Pro Version, Trial, Students

Free	Pro <small>Most popular</small>	Pro+
A fast way to get started with GitHub Copilot.	Unlimited completions and chats with access to more models.	Maximum flexibility and model choice.
\$0 <small>USD</small>	\$10 <small>USD</small> per month or \$100 per year	\$39 <small>USD</small> per month or \$390 per year
Get started	Try for 30 days free	Get started
Open in VS Code		
^ What's included: <ul style="list-style-type: none">✓ 50 agent mode or chat requests per month✓ 2,000 completions per month	^ Everything in Free and: <ul style="list-style-type: none">✓ Unlimited agent mode and chats with GPT-5 mini¹	^ Everything in Pro and: <ul style="list-style-type: none">✓ Access to all models, including Claude Opus 4.1, o3, and more

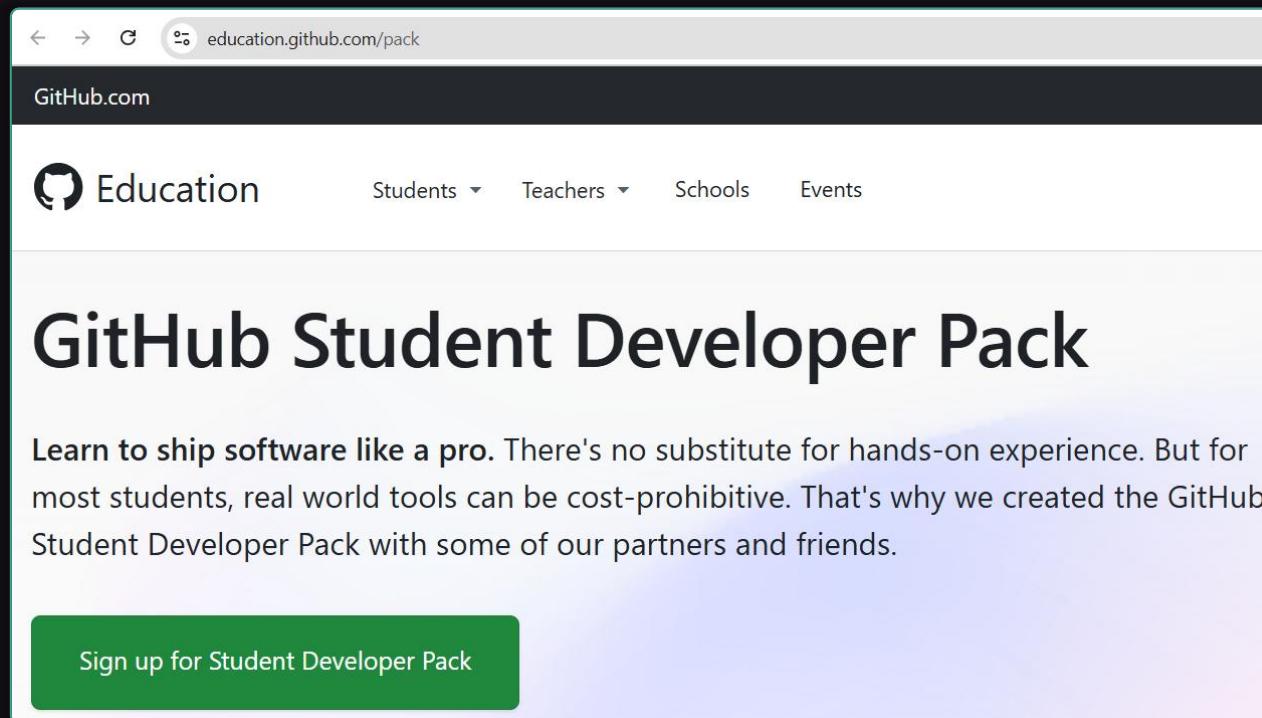
GitHub Copilot Licenses

- GitHub Copilot is a **paid** product
 - **Copilot Free** is **highly limited**: 50 chat messages / month, limited models
 - **Copilot Pro** version is recommended
 - 30 days **trial** for Copilot Pro
 - 2 years free Pro for **students**

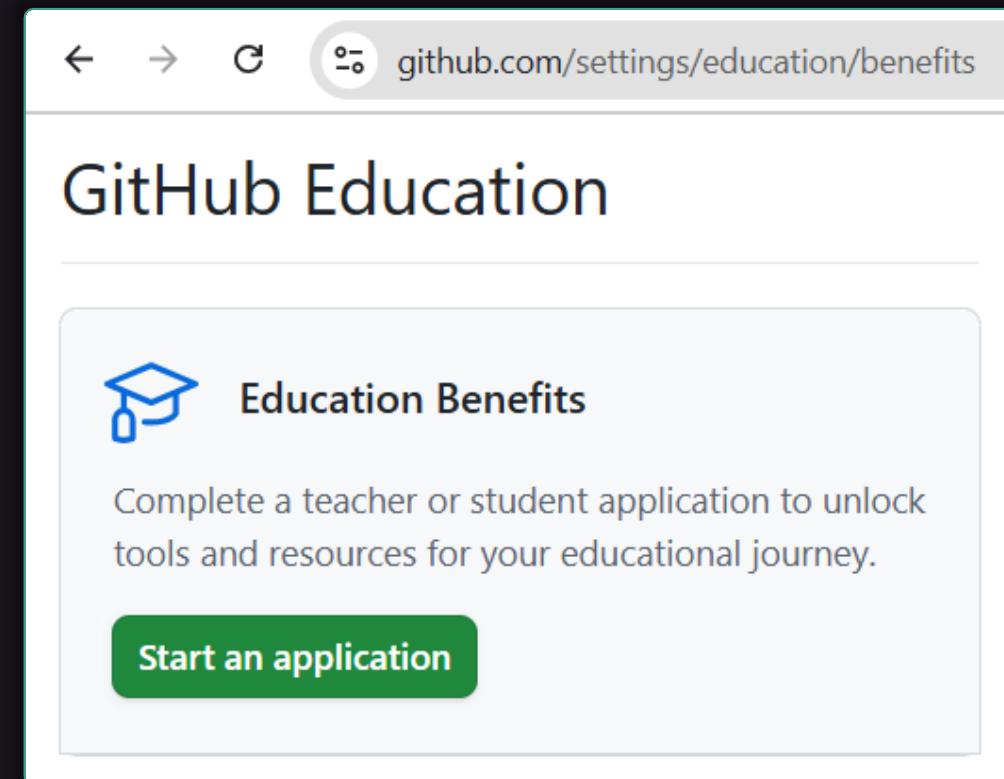


Free GitHub Copilot for Students

- GitHub offers **free 2 years Copilot Pro** for verified **students**
- Verify your student status here:
<https://education.github.com/pack>



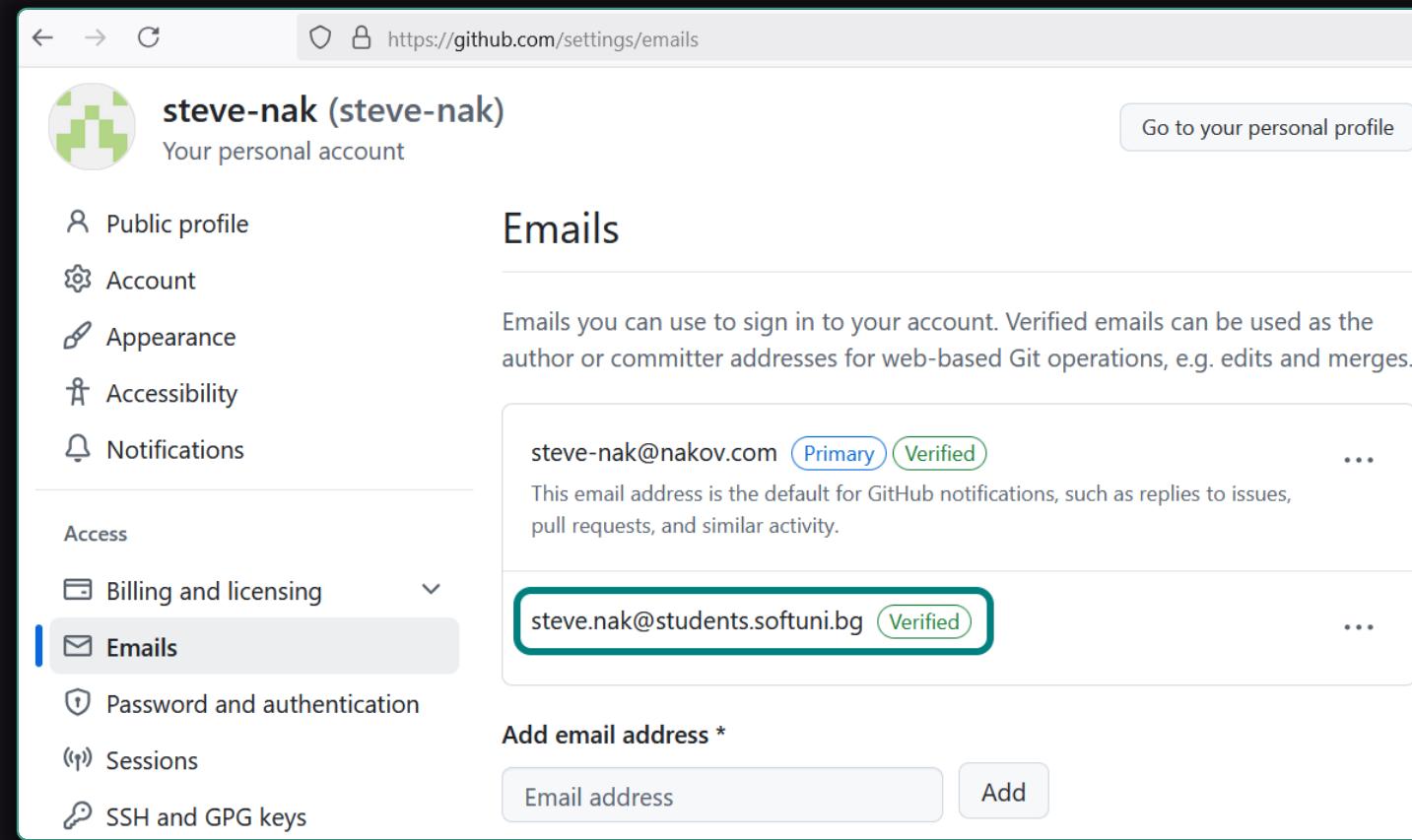
The screenshot shows the GitHub Student Developer Pack landing page at education.github.com/pack. The page features a dark header with the GitHub logo and 'Education' link. Below the header, there's a navigation bar with 'Students', 'Teachers', 'Schools', and 'Events' dropdowns. The main section is titled 'GitHub Student Developer Pack' with a sub-copy: 'Learn to ship software like a pro. There's no substitute for hands-on experience. But for most students, real world tools can be cost-prohibitive. That's why we created the GitHub Student Developer Pack with some of our partners and friends.' At the bottom is a green button labeled 'Sign up for Student Developer Pack'.



The screenshot shows the GitHub Education Benefits application page at github.com/settings/education/benefits. The page has a title 'GitHub Education'. It features a section titled 'Education Benefits' with a graduation cap icon and the text: 'Complete a teacher or student application to unlock tools and resources for your educational journey.' Below this is a green button labeled 'Start an application'.

GitHub Pro for SoftUni Students

- Add in your GitHub profile your **SoftUni student email address**: user@students.softuni.bg



The screenshot shows the GitHub settings page for account 'steve-nak'. The left sidebar has a 'Emails' section highlighted. The main content area is titled 'Emails' and displays two email addresses: 'steve-nak@nakov.com' (Primary, Verified) and 'steve.nak@students.softuni.bg' (Verified). A form at the bottom allows adding a new email address.

steve-nak (steve-nak)
Your personal account

Go to your personal profile

Public profile

Account

Appearance

Accessibility

Notifications

Billing and licensing

Emails

Password and authentication

Sessions

SSH and GPG keys

steve-nak@nakov.com Primary Verified

This email address is the default for GitHub notifications, such as replies to issues, pull requests, and similar activity.

steve.nak@students.softuni.bg Verified

Add email address *

Email address

Add

Use Your SoftUni Student ID Card



- SoftUni student ID card: <https://softuni.bg/users/profile/show>

The screenshot shows a web browser displaying the SoftUni student profile page at <https://softuni.bg/users/profile/show>. The page features a large circular profile picture of a young man. To the right of the picture, the text "STUDENT NUMBER: 400536600" is displayed. Below the profile picture, there is a summary of personal information: Name: Steve Nak, Date of birth: 14/06/1996, Preferred language: Bulgarian. On the right side of the page, there is a "PROFILE FINISH: 47%" indicator. A central box displays the student's profile card with the following details: Software University logo, Username: stevenak, Name: Steve Nak, Status: Active Student, Student No: 400536600, and Valid until: 03/26. The right sidebar contains sections for "PROFILE" (including social media links and email), "General information" (with links to My board, Trainings, Payments, Certificates, Surveys, Frequently Asked Questions, Notifications, and Settings), and a "Profile" section with an upward arrow.

STUDENT NUMBER: 400536600

Name: Steve Nak

Date of birth: 14/06/1996

Preferred language: Bulgarian

Software University

Username: **stevenak**

Name: Steve Nak

Status: Active Student

Student No: **400536600**

Valid until: **03/26**

PROFILE FINISH: 47%

PROFILE

@stevenak
(Steve Nak)

steve.nak@students.softuni.bg

General information

My board

Trainings

Payments

Certificates

Surveys

Frequently Asked Questions

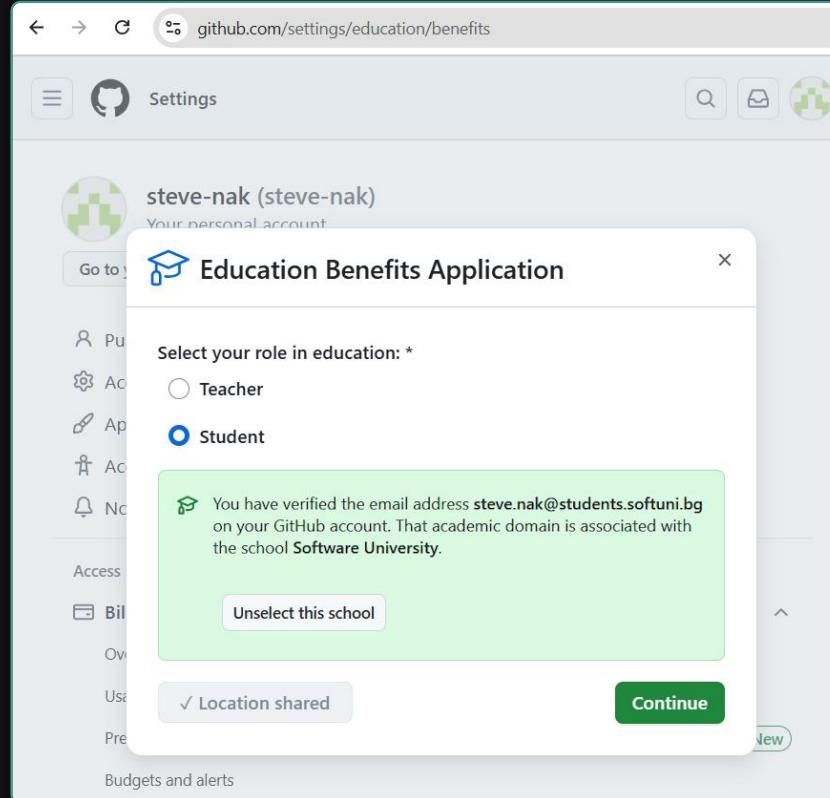
Notifications

Settings

GitHub Pro for SoftUni Students (2)



- Apply GitHub Education **student benefits**:
<https://github.com/settings/education/benefits>



steve-nak (steve-nak)
Your personal account

Settings

Go to: [GitHub](#)

Education Benefits Application

Select your role in education: *

Teacher

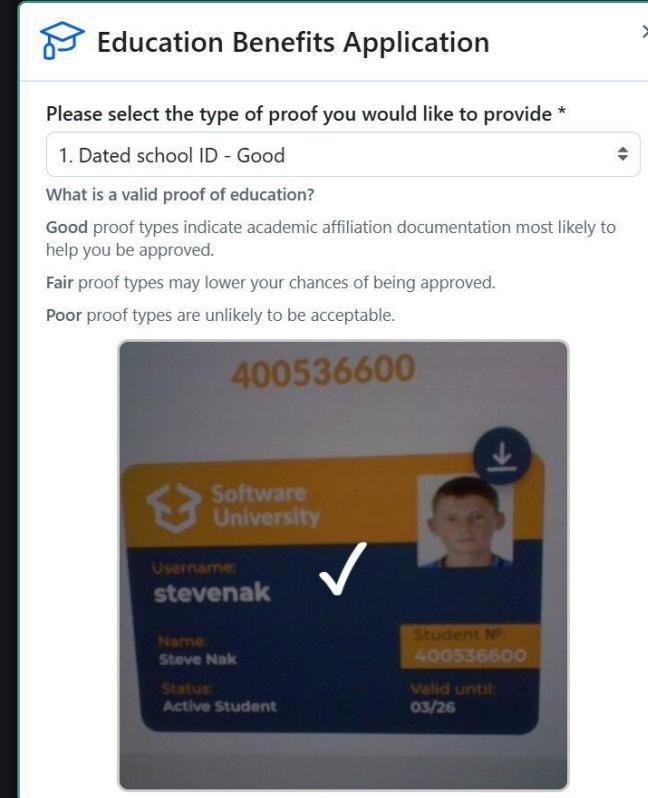
Student

You have verified the email address steve.nak@students.softuni.bg on your GitHub account. That academic domain is associated with the school Software University.

Unselect this school

Continue

✓ Location shared



Please select the type of proof you would like to provide *

1. Dated school ID - Good

What is a valid proof of education?

Good proof types indicate academic affiliation documentation most likely to help you be approved.

Fair proof types may lower your chances of being approved.

Poor proof types are unlikely to be acceptable.

Software University

400536600

Username: stevenak

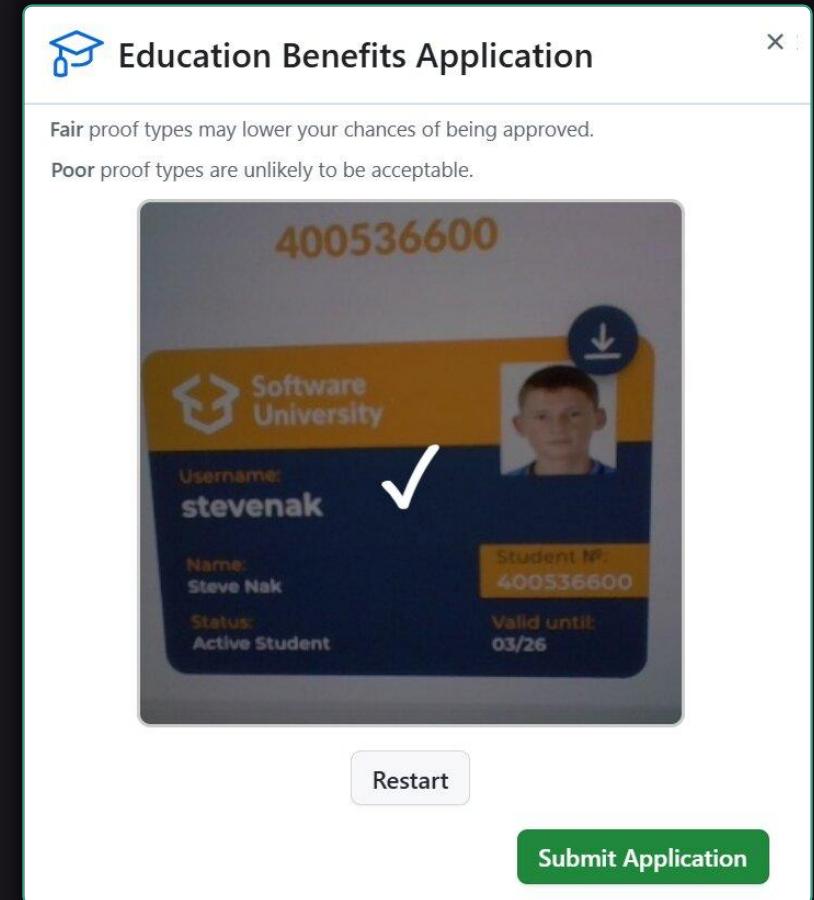
Name: Steve Nak

Status: Active Student

Student N°: 400536600

Valid until: 03/26

✓



Education Benefits Application

Fair proof types may lower your chances of being approved.

Poor proof types are unlikely to be acceptable.

400536600

Software University

Username: stevenak

Name: Steve Nak

Status: Active Student

Student N°: 400536600

Valid until: 03/26

✓

Restart

Submit Application

Wait for Approval

GitHub Education

 **Education Benefits**
Complete a teacher or student application to unlock tools and re

 **Education Benefits Application**

 Your application has been submitted.

GitHub Education

 **Education Benefits**
You have a current pending application. See below for more details.

[Start an application](#)

 **Pending**  Submitted less than a minute ago

Applied on October 01, 2025 Application Type: Student

Your application has been received and is currently pending review.

Wait for Activation of Your Benefits

 **Education Benefits**
Complete a teacher or student application to unlock tools and resources for your educational journey.

Start an application

Approved  Submitted 9 minutes ago

Approved on October 02, 2025 Application Type: Student

Your academic status has been verified. Congratulations!

Your academic benefits, including Partner offers, will become available after 72 hours of your verification.

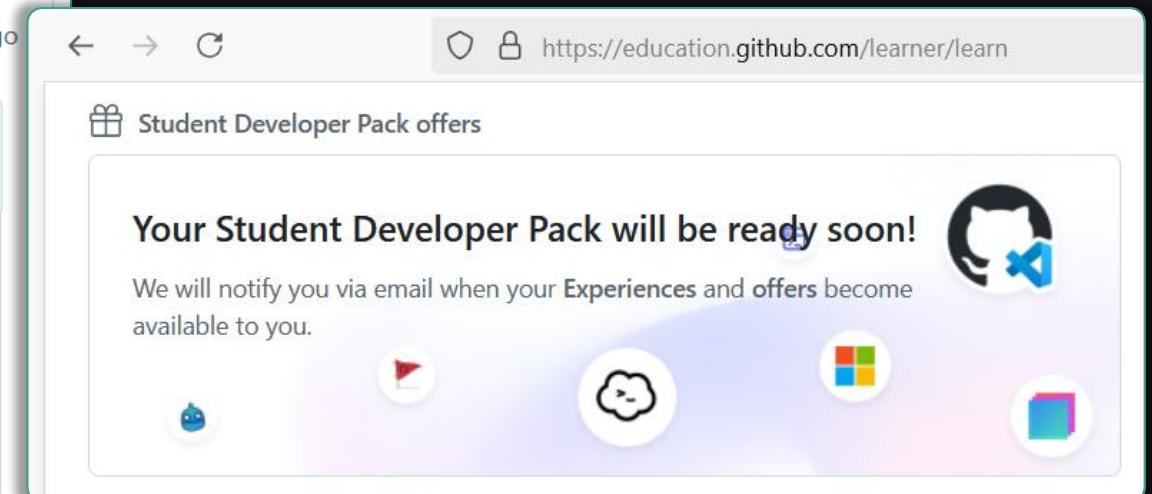
Once the benefits become available, you will be able to access the Students Developer Pack offers [here](#).

To redeem your Copilot Pro coupon, please sign up via this [link](#).

We hope you enjoy your GitHub Education benefits.

Your benefits will expire on October 01, 2027.

- **Wait 3 days for activation**



 <https://education.github.com/learner/learn>

 **Student Developer Pack offers**

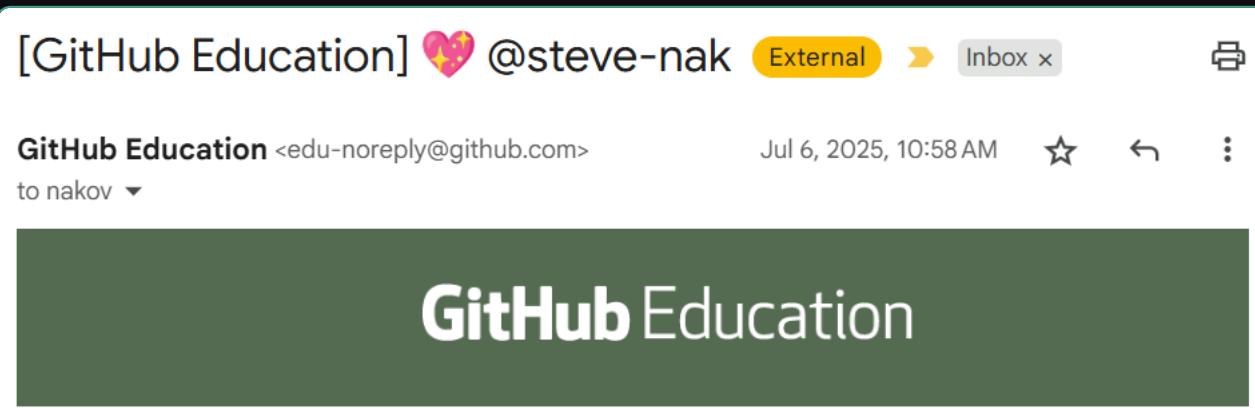
Your Student Developer Pack will be ready soon!

We will notify you via email when your **Experiences** and **offers** become available to you.

- You will receive a welcome **email**

GitHub Education Benefits



Hey Steve Nak,

Welcome!

Thank you for joining [GitHub Education](#). GitHub Education helps students, teachers, and schools access the tools and resources they need to shape the next generation of developers.

Congratulations, you are now a GitHub Education student! You can now explore various offers provided by GitHub's partners in the GitHub Student Developer Pack, view events, and much more when you sign in at:

https://education.github.com/globalcampus/student?email_referrer=true

github.com/settings/education/benefits

GitHub Education

Education Benefits

You have a current student coupon applied. Find more information on your benefits [here!](#)

[Start an application](#)

> **Coupon applied**  Expires in almost 2 years

- Now your application shows "**Coupon applied**"
- Your **benefits** are ready

GitHub Education Student Pack



- Your **GitHub Student Developer Pack** provides many free dev products, tools and services: <https://education.github.com/pack>

The image shows two screenshots of the GitHub Student Developer Pack. The left screenshot is the main landing page for the pack, featuring sections for 'Experiences' (LaunchPad, Understanding Markdown, Intro to GitHub, Intro to Copilot) and a central area for learning to ship software like a pro. The right screenshot is the 'All offers' page, displaying various partner programs like GitHub Certification Offer 2025, GitHub Copilot, Notion, Namecheap, and DigitalOcean.

GitHub Student Developer Pack

Learn to ship software like a pro. There's no substitute for hands-on experience. But for most students, real world tools can be cost-prohibitive. That's why we created the GitHub Student Developer Pack with some of our partners and friends.

Love the pack? Spread the word

X Post Like 78K

Experiences

Discover the best ways to use pack offers with Experiences. Experiences are curated bundles of pack partner products, GitHub tools, resources that are designed for you learn new skills and make the most out of the Student Developer Pack and your journey in GitHub.

LaunchPad LaunchPad LaunchPad LaunchPad

Intro to Copilot Understanding Markdown Intro to GitHub Intro to Copilot

All offers

About GitHub Certification Offer 2025
Getting a GitHub credential is a resounding endorsement that validates your skills, credibility, and knowledge of the world's most widely adopted AI-powered developer platform.

Offer
Showcase your expertise with GitHub Credentials. Verified students get 1 free voucher code to use for either the Foundations or Copilot GitHub Certifications exam. Current coupons expire on June 30, 2026.

[Request your offer code to get access >](#)

[Get help at GitHub Certification Offer 2025 support](#)

About GitHub Copilot
Use GitHub Copilot to get autocomplete-style suggestions from an AI pair programmer as you code.

Offer
Free access to Copilot Pro while you're a student. To enable Copilot Pro, go to your account settings and under Code, planning, and automation, select Copilot to sign up for free. Or click on the link below to claim the offer.

[Get direct access on the GitHub Copilot website >](#)

[Get help at GitHub Copilot support](#)

About Notion
Notion is a single space where you can think, write, and plan. Capture thoughts, manage projects, or even run an

About namecheap
Affordable registration, hosting, and domain management

Offer #1
1 year domain name registration on the .me TLD.

[Get access by connecting your GitHub account on Namecheap >](#)

Offer #2
1 SSL certificate free for 1 year.

[Request your offer code to get access >](#)

[Get help at Namecheap support](#)

About DigitalOcean
Simple cloud hosting, built for developers

Activate GitHub Copilot Pro for Free



- Redeem your Copilot Pro student voucher here:
 - https://github.com/github-copilot/free_signup

The image shows three sequential screenshots of the GitHub Copilot Pro free signup process:

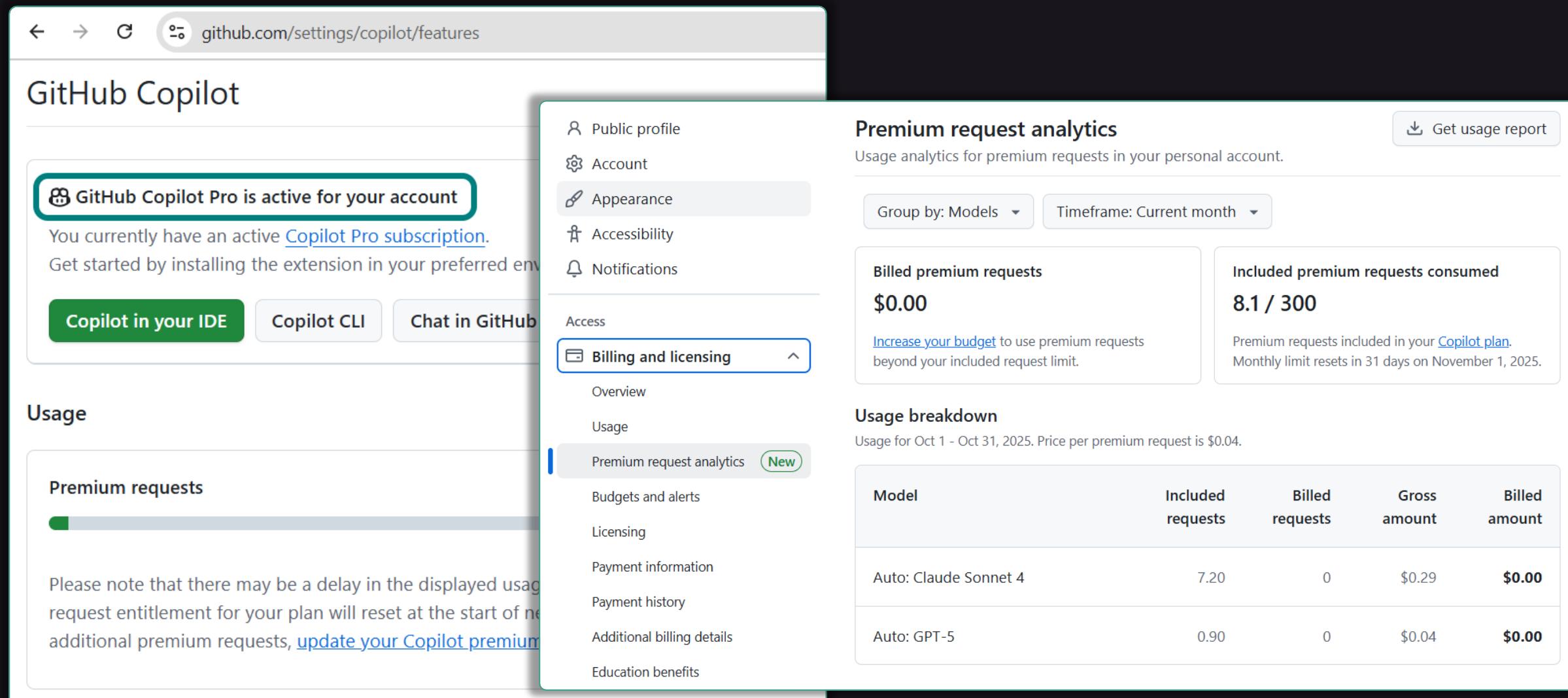
- Step 1: Initial Landing Page**

The first screenshot shows the initial landing page for GitHub Copilot Pro. It features a large "GitHub Copilot Pro" logo and the tagline "Your AI pair programmer". Below this, there's a section titled "Use GitHub Copilot for free" with a message: "Congratulations! You are eligible to use GitHub Copilot for free." It lists several benefits: "Get code suggestions in more than a dozen coding languages (Python, JavaScript, TypeScript, Go, and Ruby)", "Plugs into IDEs including VS Code, Visual Studio, Neovim, and ...", and "Eligibility requirements". A green button at the bottom says "Get access to GitHub Copilot".
- Step 2: Preferences and Privacy**

The second screenshot shows the "Select your preferences" step. It includes sections for "Features" (Editor preview features, Copilot Chat in GitHub.com, Copilot CLI), "Privacy" (Suggestions matching public code, Allow GitHub to use my data for product improvements, Allow GitHub to use my data for AI model training), and a "Save and complete setup" button.
- Step 3: Final Confirmation**

The third screenshot shows the final confirmation screen. It displays the message "GitHub Copilot is now ready" and "Add it to your editor and start building." It includes a section titled "Install the GitHub Copilot extension" with links to various IDEs: Visual Studio Code, Visual Studio, JetBrains, Vim/Neovim, Eclipse, and Xcode.

GitHub Copilot Pro for Education



The screenshot shows the GitHub Copilot Pro settings page at github.com/settings/copilot/features. The main header says "GitHub Copilot". On the left, a green box highlights "GitHub Copilot Pro is active for your account". Below it, there's a message about an active Copilot Pro subscription and links to "Copilot in your IDE", "Copilot CLI", and "Chat in GitHub". The right side features a sidebar with "Public profile", "Account", "Appearance" (which is selected), "Accessibility", and "Notifications". Under "Access", there's a "Billing and licensing" section with "Overview", "Usage", and "Premium request analytics" (which is selected). Other options in this menu include "Budgets and alerts", "Licensing", "Payment information", "Payment history", "Additional billing details", and "Education benefits". The main content area is titled "Premium request analytics" and shows usage analytics for the current month. It includes sections for "Billed premium requests" (\$0.00), "Included premium requests consumed" (8.1 / 300), and a breakdown of usage by model (Auto: Claude Sonnet 4 and Auto: GPT-5). A "Get usage report" button is also present.

Premium request analytics

Usage analytics for premium requests in your personal account.

Group by: Models ▾ Timeframe: Current month ▾

Billed premium requests
\$0.00

[Increase your budget](#) to use premium requests beyond your included request limit.

Included premium requests consumed
8.1 / 300

Premium requests included in your [Copilot plan](#). Monthly limit resets in 31 days on November 1, 2025.

Usage breakdown

Usage for Oct 1 - Oct 31, 2025. Price per premium request is \$0.04.

Model	Included requests	Billed requests	Gross amount	Billed amount
Auto: Claude Sonnet 4	7.20	0	\$0.29	\$0.00
Auto: GPT-5	0.90	0	\$0.04	\$0.00

Lesson Summary

- Developers use **IDE** (like **VS Code**) to **write, run, test, debug** and bug fix code, bundle and **deploy** apps
- **VS Code** is world's most popular IDE for developers
- Modern software engineers use **AI-assisted development** with tools like **GitHub Copilot, Cursor** and **Claude Code**
- **AI coding** relies on powerful **LLMs** with **agents** and **tools**, needs **prompting skills**, consume **tokens**, costs money
- **GitHub Copilot** agent generates, runs, edits, fixes code
 - VS Code + Copilot == powerful tool to **develop software with AI**

Questions?



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